1024/3

Vol. 1024 Number 3

OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

Route to:

PATENTS

November 16, 1982

U.S. DEPARTMENT OF COMMERCE

Patent and Trademark Office

PUBLISHED WEEKLY BY AUTHORITY OF CONGRESS

OFFICIAL GAZETTE of the UNITED STATES PATENT AND TRADEMARK OFFICE

November 16, 1982 Volume 1024 Number 3

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The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly.

THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly.

GENERAL INFORMATION concerning PATENTS.

GENERAL INFORMATION concerning TRADEMARKS.

PRINTED COPIES OF PATENTS are furnished by the Patent and Trademark Office at $1.00 each; PLANT PATENTS in color, $8.00 each; copies of TRADEMARKS at $1.00 each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT member countries and the most recent PCT rule changes, see the notices appearing in the Official Gazette at 1001 O.G. 14 on Dec. 9, 1980 and at 1012 O.G. 20 on Nov. 17, 1981. For use of the European Patent Office as a searching authority for PCT applications filed in the United States, see the notice in the Official Gazette of Sept. 28, 1982 at 1022 O.G. 52.

Note that the international fees have been increased as of Jan. 1, 1982 and that the domestic PCT fees have been increased as of Oct. 1, 1982. Domestic PCT fees were increased by a rule change which was published at 1021 O.G. 11 on Aug. 10, 1982. The current schedule of fees is as follows:

Transmittal fee	$ 125.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
· No corresponding prior U.S. national application filed	500.00
· Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
· All cases	710.00
International Fees	
Basic Fees (first 30 pages)	270.00
Basic Supplemental Fee (for each sheet over 30)	6.00
Designation fee (for each national or regional office)	65.00

DONALD J. QUIGG,
Sept. 10, 1982. *Deputy Commissioner of Patents & Trademarks.*

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,991,770, Re. S.N. 393,772, Filed June 30, 1982, Cl. 128/362, METHOD FOR TREATING BENIGN AND MALIGNANT TUMORS UTILIZING RADIO FREQUENCY, ELECTROMAGNETIC RADIATION, Harry H. LeVeen, Owner of Record: *Inventor,* Attorney or Agent: John S. Hale, Ex. Gp.: 335

4,264,200, Re. S.N. 354,684, Filed Mar. 4, 1982, Cl. 355/075, PLATEN MODULE FOR COMPUTER FANFOLD REPRODUCTION, Donald R. Tickner, et al., Owner of Record: *Xerox Corp., Stamford, Conn.,* Attorney or Agent: Ronald Zibelli, et al., Ex. Gp.: 211

4,264,200, Re. S.N. 354,692, Filed Mar. 4, 1982, Cl. 355/75, PLATEN MODULE FOR COMPUTER FANFOLD REPRODUCTION, Robert L. Greco, Jr., Owner of Record: *Xerox Corp., Stamford, Conn.,* Attorney or Agent: Ronald Zibelli, et al., Ex. Gp.: 211

4,279,914, Re. S.N. 380,010, Filed May 19, 1982, Cl. 424/258, THROMBOCYTE AGGREGATION INHIBITING COMPOSITION AND METHOD, Alfred G. Maasbol, et al., Owner of Record: *Herman Gottfried Schnabel, Hamburg, Germany,* Attorney or Agent: Michael J. Striker, et al., Ex. Gp.: 125

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b).

4,153,469 Reexam. No. 90/000,271, Requested: Oct. 8, 1982, Cl. 501/86, MONOCRYSTALS BASED ON STABILIZED ZIRCONIUM OR HAFNIUM DIOXIDE AND METHOD OF PRODUCTION THEREOF, Vladimir I. Alexandrov, et al., Owner of Record: *Fizichesky Institut Imeni P. N. Lebedeva Akademii Nauk SSSR., Moscov, USSR,* Attorney or Agent: Holman & Stern, Ex. Gp.: 113, Requester: Singh Industries, Inc., Cedar Knolls, N.J.

4,161,219, Reexam. No. 90/000,273 Requested: Oct. 12, 1982, Cl. 166/324, PISTON ACTUATED WELL SAFETY VALVE, Ronald E. Pringle, Owner of Record: *Requester,* Attorney or Agent: Fulbright & Jaworski, Ex. Gp.: 356, Requester: Camco, Inc., Houston, Tex.

Department of the Treasury
United States Customs Service
(T.D. 82-160)
Notice of Recordation of Trade Name
"MEAD JOHNSON & COMPANY"

On May 19, 1982, a notice of application for the recordation under section 42 of the Act of July 5, 1946, as amended (15 U.S.C. 1124), of the trade name "MEADE JOHNSON & COMPANY" was published in the Federal Register (47 FR 21672). The notice advised that prior to final action on the application, filed pursuant to section 133.12, Customs Regulations (19 CFR 133.12), consideration would be given to relevant data, views, or arguments submitted in opposition to the recordation and received not later than 60 days from the date of publication of the notice. No responses were received in opposition to the application.

The name "MEAD JOHNSON & COMPANY" is hereby recorded as the trade name of Mead Johnson & Company, located at 2404 Pennsylvania St., Evansville, Ind. 47721. The trade name is used in connection with the following merchandise which is manufactured in numerous foreign countries: Pharmaceuticals and medicines; chemicals; toiletries; vitamins; medical appliances; foods for infants and invalids and other nutritional foods.

DONALD W. LEWIS,
Aug. 26, 1982. *Director, Entry Procedures and Penalties Division.*

Department of the Treasury
United States Customs Service
Notice of Application for Recordation of Trade Name
"THE BAYER COMPANY"

Application has been filed pursuant to section 133.21, Customs Regulations (19 CFR 133.12), for the recordation under section 42 of the Act of July 5, 1946, as amended (15 U.S.C. 1124), of the trade name "THE

BAYER COMPANY," used by Sterling Drug, Inc., a corporation organized under the laws of the State of Delaware, 90 Park Ave., New York, N.Y. 10016.

The application states that the trade name is used in connection with pharmaceuticals manufactured in Canada, West Indies and the United States. Sterling Drug Ltd., of Aurora, Canada, is authorized to use the trade name. Appropriate accompanying papers were submitted with the application.

Before final action is taken on the application, consideration will be given to any relevant data, views, or arguments submitted in writing by any person in opposition to the recordation of this trade name. Any such submission should be addressed to the Commissioner of Customs, Entry, Licensing and Restricted Merchandise Branch, Washington, D.C. 20229, in time to be received no later than 60 days from the date of publication of this notice in the Federal Register.

FOR FURTHER INFORMATION CONTACT:

Harriet Lane, Entry, Licensing and Restricted Merchandise Branch, U.S. Customs Service, 1301 Constitution Ave. N.W., Washington, D.C. (202-566-5765).

Notice of the action taken on the application for recordation of this trade name will be published in the Federal Register.

DONALD W. LEWIS,

Sept.9, 1982. *Director, Entry Procedures and Penalties Division.*

PATENT NOTICES

Certificates of Correction for the Week of Nov. 16, 1982

D. 264,677	4,309,902	4,334,466	4,342,269
4,096,324	4,310,028	4,335,342	4,342,314
4,125,614	4,310,494	4,335,641	4,342,341
4,164,225	4,311,361	4,335,793	4,342,731
4,167,651	4,312,101	4,336,221	4,342,732
4,178,796	4,315,223	4,336,407	4,342,986
4,193,238	4,317,738	4,336,544	4,343,539
4,194,959	4,319,830	4,336,802	4,343,843
4,198,186	4,320,876	4,337,132	4,344,419
4,228,286	4,321,794	4,337,137	4,344,435
4,229,620	4,321,996	4,337,236	4,345,339
4,236,570	4,322,121	4,337,295	4,345,345
4,239,687	4,323,447	4,337,603	4,345,423
4,240,739	4,323,561	4,337,632	4,345,488
4,247,274	4,323,568	4,337,804	4,345,493
4,251,679	4,324,819	4,337,910	4,345,885
4,261,736	4,325,078	4,338,091	4,345,978
4,263,388	4,326,072	4,338,714	4,346,262
4,264,358	4,326,290	4,338,729	4,347,109
4,267,033	4,326,934	4,338,807	4,347,616
4,268,655	4,327,004	4,338,858	4,347,632
4,274,632	4,328,742	4,339,620	4,348,112
4,286,056	4,329,779	4,339,664	4,348,236
4,288,366	4,330,740	4,340,090	4,348,601
4,301,754	4,332,566	4,340,143	4,349,855
4,301,850	4,332,923	4,341,496	4,350,694
4,302,493	4,332,927	4,341,698	4,350,913
4,302,765	4,333,589	4,341,728	
4,303,662	4,333,983	4,341,813	
4,306,735	4,334,295	4,342,058	

Disclaimers

3,236,857.—*Karl Zeile, Karl Heinz Hauptmann* and *Helmut Stahle,* Ingelheim am Rhine, Germany. 2-(PHENYL-AMINO)-1,3-DIAZACYCLOPENT-ENE-(2) SUBSTITUTION PRODUCTS. Patent dated Feb. 22, 1966. Disclaimer filed Aug. 13, 1982, by the assignee, *Boehringer Ingelheim G.m.b.H.*

The term of this patent subsequent to Aug. 24, 1982 has been disclaimed.

3,671,372.—*Paul Hoffman,* Gainesville, Fla. LAMINATED PAPER WITH REINFORCING SCRIM. Patent dated June 20, 1972. Disclaimer filed Sept. 13, 1982, by the assignee, *Georgia-Pacific Corp.*

Hereby enters this disclaimer to claims 1, 10, 11, 12, 13, 14, 15 and 16 of said patent.

3,823,223.—*John W. Liska,* Cuyahoga Falls, and *Joseph A. Beckman,* Akron, Ohio. RUBBER-REINFORCING AGENT. Patent dated July 9, 1974. Disclaimer filed Sept. 7, 1982, by the assignee, *The Firestone Tire & Rubber Co.*

Hereby enters this disclaimer to claims 1 and 2 of said patent.

3,914,620.—*Michael S. Millhollan,* Mesa and *Ronald L. Treadway,* Scottsdale, Ariz. DECODE CIRCUITRY FOR BIPOLAR RANDOM ACCESS MEMORY. Patent dated Oct. 21, 1975. Disclaimer filed Sept. 20, 1982, by the assignee, *Motorola, Inc.*

Hereby enters this disclaimer to claims 1–6 of said patent.

4,027,285.—*Michael S. Millholan,* Mesa and *Ronald L. Treadway,* Scottsdale, Ariz. DECODE CIRCUITRY FOR BIPOLAR RANDOM ACCESS MEMORY. Patent dated May 31, 1977. Disclaimer filed Sept. 20, 1982, by the assignee, *Motorola, Inc.*

Hereby enters this disclaimer to claim 1 of said patent.

4,059,422.—*Robert L. Steiner,* Chicago, Ill. DISPENSER FOR ODOR CONTROL AGENT. Patent dated Nov. 22, 1977. Disclaimer filed Feb. 1, 1979, by the assignee, *The Risdon Manufacturing Co.*

Hereby enters this disclaimer to claims 1 through 14 of said patent.

4,143,235.—*Jack A. Duisman,* El Cerrito, Calif. CADMIUM SULFIDE PHOTOVOLTAIC CELL AND METHOD OF FABRICATION. Patent dated Mar. 6, 1979. Disclaimer filed Sept. 9, 1982, by the assignee, *Chevron Research Co.*

Hereby enters this disclaimer to claims 6, 7, 12 and 13 of said patent.

4,172,226.—*Saul Rubin,* Toronto, Canada. REMOTE RADIATION DETECTION SYSTEM. Patent dated Oct. 23, 1979. Disclaimer filed Sept. 22, 1982, by the inventor.

Hereby enters this disclaimer to claim 1 of said patent.

4,321,630.—*Charles J. Kramer,* Pittsford, N.Y. LINEAR INTEGRATING CAVITY LIGHT COLLECTOR. Patent dated Mar. 23, 1982. Disclaimer filed Sept. 24, 1982, by the assignee, *Xerox Corp.*

Hereby enters this disclaimer to claims 1, 2, 3, 5, 6, 7, 8, 12, 13 and 17 of said patent.

Dedications

3,474,237.—*Joseph C. Hastings,* Haverford, Pa. STRAIN GAGE ROSETTE CALCULATOR. Patent dated Oct. 21, 1969. Dedication filed July 8, 1982, by the assignee, *Vishay Intertechnology, Inc.*

Hereby dedicates the remaining term of said patent to the Public.

3,939,293.—*Vlasta Brusic,* Mount Kisco, and *Robert O. Lussow,* Hopewell Junction, N.Y. METHOD FOR PASSIVATING CHROMIUM. Patent dated Feb. 17, 1976. Dedication filed July 18, 1979, by the assignee, *International Business Machines Corp.*

Hereby dedicates all claims for the entire remaining term of said patent to the Public.

4,061,724.—*Robert William Grose,* Mahopac and *Edith Marie Flanigen,* White Plains, N.Y. CRYSTALLINE SILICA. Patent dated Dec. 6, 1977. Dedication filed Sept. 20, 1982, by the assignee, *Union Carbide Corp.*

Hereby dedicates to the Public the entire term of said patent.

4,241,505.—*Frederick M. Bodycomb, Jr.,* and *Glenn R. Bauman,* Arapahoe, Colo. DUST SHROUD FOR PORTABLE CIRCULAR SAW. Patent dated Dec. 30, 1980. Dedication filed July 19, 1982, by the assignee, *Johns-Manville Corp.*

Hereby dedicates to the Public the entire remaining term of said patent.

4,243,011.—*Frederick M. Bodycomb, Jr.,* Englewood and *Glenn R. Bauman,* Littleton, Colo. DUST SHROUD FOR PIPE-CUTTING PORTABLE CIRCULAR SAW. Patent dated Jan. 6, 1981. Dedication filed July 19, 1982, by the assignee, *Johns-Manville Corp.*

Hereby dedicates to the Public the entire remaining term of said patent.

Disclaimer and Dedication

3,273,387.—*Carl M. Westbrook*, and *Loyal H. Hess*, Beloit, Wis. TORQUE METER. Patent dated Sept. 20, 1966. Disclaimer and Dedication filed Sept. 4, 1979, by the assignee, *Dana Corp.*

Hereby disclaims and dedicates to the Public the remaining term of said patent.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Birmingham Public Library	(205) 254-2555
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7607
California	Los Angeles Public Library	(213) 626-7555 Ext. 273
	Sacramento: California State Library	(916) 322-4572
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware	(302) 738-2238
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4559
Illinois	Chicago Public Library	(312) 269-2865
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6552
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214, 215
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7814
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater. Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1321**
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 226
South Carolina	Charleston: Medical University of South Carolina	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

**Call only between the hours of 10:00 a.m. and 5:00 p.m.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF September 30, 1982

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director ..... Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	11-20-80
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director ..... Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	2-27-81
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director .... Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	5-13-81
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director ..... Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	4-20-81
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director ..... Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	7-07-81
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	9-19-80
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director ..... Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	3-02-81
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—EARL LEVY, Director ..... Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	11-24-80
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director ..... Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling; Shaft; Impellers; Rotary Fluid Motors.	5-22-80
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director ..... Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	11-26-79
DESIGN, GROUP 290—KENNETH L. CAGE, Director ..... Industrial Arts; Household, Personal and Fine Arts.	10-20-80
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director ..... Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	4-24-81
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—M. M. NEWMAN, Director ... Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	2-06-81
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director ..... Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	2-13-80
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director ..... Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	11-17-80
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—A. L. SMITH, Director ..... Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	8-22-80

Expiration of patents: The patents within the range of numbers indicated below expire during September 1982, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,204,251 to 3,209,368, inclusive

Plant Patents ..... Numbers 2,552 to 2,557 inclusive

REISSUES

NOVEMBER 16, 1982

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 31,079

METHOD FOR MANUFACTURING COMPLEMENTARY INSULATED GATE FIELD EFFECT TRANSISTORS

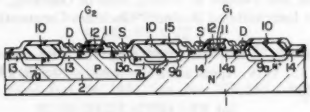
Kouichi Nagasawa, Kunitachi; Yasunobu Kosa, and Satoshi Meguro, both of Kodaira, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Original No. 4,110,899, dated Sep. 5, 1978, Ser. No. 756,711, Jan. 4, 1977. Application for reissue Aug. 29, 1980, Ser. No. 182,775

Claims priority, application Japan, Jan. 12, 1976, 51-2057

Int. Cl.³ H01L *21/26*

U.S. Cl. 29—571 **29 Claims**



1. A method for manufacturing complementary insulated gate field effect transistors comprising the steps of:

(a) delimiting a portion of a surface of a semiconductor substrate of a first conductivity type and forming therein a well layer of a second conductivity type, forming a thin insulating layer over the entire surface thereof and then forming a silicon nitride layer over the entire surface thereof;

(b) etching away said silicon nitride layer at least [those areas on] *in an area in* which a field oxide [layers are] *layer is* to be formed;

(c) introducing *an* impurity of the second conductivity type at that area in said well layer of the second conductivity type on which the field oxide layer is to be formed;

(d) heat treating the substrate to selectively thermally oxidize the areas on which the field oxide [layers are] *layer is* to be formed, using said silicon nitride layer as a mask to form a thick field oxide layer; and

(e) removing the silicon nitride layer and the underlying thin insulating layer formed in said step (a), selectively forming gate insulation layers and silicon layers on the exposed substrate and well layer, *and* forming source regions and drain regions of [MIS devices] *insulated gate field effect transistors* in said semiconductor substrate of the first conductivity type and the well layer of the second conductivity type using said silicon layers and said thick field oxide [layers] *layer* as masks[, and forming diffusion layers of desired impurity concentrations beneath said thick field oxide layers].

Re. 31,080

MASTER CYLINDER

Robert F. Gaiser, Stevensville, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Original No. 4,249,381, dated Feb. 10, 1981, Ser. No. 110,151, Jan. 7, 1980. Continuation of Ser. No. 890,757, Mar. 27, 1978, abandoned. Application for reissue May 7, 1981, Ser. No. 261,356

Int. Cl.³ B60T *11/20*

U.S. Cl. 60—562 **31 Claims**

32. A master cylinder comprising:

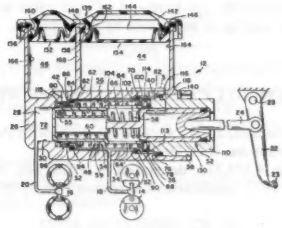
a housing having a tapered bore therein, said housing having first and second compensator ports for connecting said tapered bore to a fluid reservoir and first and second outlet ports connected to fluid pressure responsive devices;

a sleeve member located in said tapered bore having a plurality of openings through which fluid is communicated to said first outlet port;

first and second seals associated with said sleeve member;

bearing means engaging said sleeve member, said bearing means and sleeve member holding said first and second seals in a substantially stationary position within said bore while defining flow paths from the reservoir into said tapered bore;

piston means having a first cylindrical member located in said tapered bore by said bearing means and a second cylindrical member being located in said tapered bore by a lip on said sleeve member, said first and second cylindrical members engaging said first and second seals, respectively, and cooperating with said housing to define first and second chambers adjacent said first and second outlet ports, respectively, each of said first and second cylindrical members having a fluted section located on the end thereof for defining an extension for said flow paths to allow fluid communication to the first



and second chambers, said second cylindrical member having a first diameter section and a second diameter section, said first diameter section having a lip on the peripheral surface thereof for engaging said sleeve member to hold the second diameter section in substantially the center of said bore in said second chamber;

a first spring located between said first and second cylindrical members to establish the size of said first chamber;

a second spring located between said first cylindrical member and said sleeve member for urging said first and second cylindrical members out of said first and second chambers toward a rest position; and

input means responsive to an input force for moving said piston means past said seals to interrupt communication between the reservoir and the bore and pressurizing the fluid in said first and second chambers to supply the fluid pressure responsive devices with an operational fluid pressure through said first and second outlet ports.

Re. 31,081

RAILROAD SWITCH HEATER

Henry Keep, Jr., 88 E. Wharf Rd., Madison, Conn. 06443

Original No. 4,195,805, dated Apr. 1, 1980, Ser. No. 890,637, Mar. 20, 1978. Application for reissue Mar. 4, 1981, Ser. No. 240,582

Int. Cl.³ E01B *7/24*

U.S. Cl. 246—428 **21 Claims**

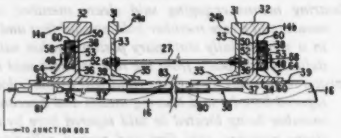
1. Apparatus for heating a railroad rail comprising:

an elongate, bendable, high temperature heating cable disposed lengthwise against and along a side of the rail web, said cable comprising an electrical resistance heating wire encased in high temperature resistant electrically insulating material confined inside a thermally conductive deformable metal sheath,

an elongate, [pliable,] heat insulating mat disposed length-

wise against and along a length of said cable and portions of said web laterally adjacent thereto to prevent heat losses by convection or radiation from said cable length, said mat comprising an elongate mass of high temperature resistant ceramic fiber insulation confined [in a flexible sleeve] *by means* that prevents fiber of said mass from creeping between said cable and the rail,

an elongate, substantially rigid casing member fitted length-



wise over said mat and bearing against said web side to confine said mat in place,

means holding said casing member *and thereby said mat and said cable* tightly in place against the rail web; and means for supplying current at high [wattage to] *watt density through* said wire;

whereby the rail along said cable length is heated efficiently by conduction, yet burn-out of said cable is prevented, during heating of said cable by said current.

Re. 31,082

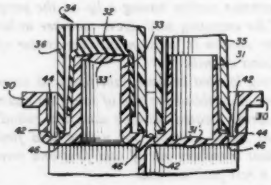
HERMETICALLY SEALED TAMPERPROOF PORT PROTECTOR

David A. Winchell, Twin Lakes, Wis., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Original No. 4,111,324, dated Sep. 5, 1978, Ser. No. 777,748, Mar. 14, 1977. Application for reissue Feb. 7, 1979, Ser. No. 10,057

Int. Cl.³ B65D *41/00, 41/32*

U.S. Cl. 215—232 **1 Claim**



7. A container of the type having a neck portion and at least two ports through said neck portion, the improvement comprising thermoplastic closure cap portions covering each of said ports and extending upwardly from said neck portion, said closure cap portions being bonded to the top surface of said neck portion, said neck portion and each of said closure cap portions defining a frangible section adjacent the bonded area, said closure cap portions forming a sterile hermetically sealed environment over each port capable of withstanding normal differential pressure stresses, said protective closure cap portions having a length to diameter ratio providing sufficient mechanical advantage leverage to rupture the frangible section when the closure cap portion is pushed sideways, said closure cap portions each being removable independently of each other.

Re. 31,083

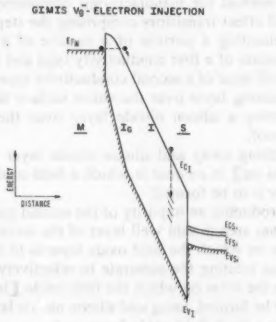
NON-VOLATILE MEMORY DEVICES FABRICATED FROM GRADED OR STEPPED ENERGY BAND GAP INSULATOR MIM OR MIS STRUCTURE

Roger F. DeKeersmaecker, Herent, Belgium; Donelli J. DiMaria, and Donald R. Young, both of Ossining, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Original No. 4,217,601, dated Aug. 12, 1980, Ser. No. 12,279, Feb. 15, 1979. Application for reissue Dec. 5, 1980, Ser. No. 213,537

Int. Cl.³ H01L *29/34, 29/78*

U.S. Cl. 357—54 **21 Claims**



18. A metal-insulator-metal or metal-insulator-semiconductor structure, wherein the insulator has disposed thereon at its first interface, at least one relatively thin successive oxide layer, each successive oxide layer containing an increasing silicon content which provides an injection region where holes or electrons depending on voltage bias, can be injected into the insulator under low to moderate electrical field conditions from the contact at this first interface, while, simultaneously electron or hole injection from said insulator's second interface is blocked, the improvement being a charge trapping layer embedded in said insulator near its second interface for capturing and storing injected electrons or holes with high efficiency.

PLANT PATENTS

GRANTED NOVEMBER 16, 1982

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,939
ROSE PLANT

Pernille Olesen, and Mogens Olesen, both of 58 Kelleriisvej, DK 3490 Kvistgaard, Denmark

Filed Jun. 18, 1981, Ser. No. 274,801
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—9 **1 Claim**

1. A new and distinct variety of rose plant of the miniature class, substantially as shown and described, characterized particularly by Rhodonite red buds opening to Spinel red flowers borne on an upright plant of excellent disease resistance and winter hardiness.

4,940
ROSE PLANT

Pernille Olesen, and Mogens Olesen, both of 58 Kelleriisvej, DK 3490 Kvistgaard, Denmark

Filed Jun. 29, 1981, Ser. No. 278,185
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—11 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as shown and described, characterized particularly by flowers of brilliant neyron rose coloration lightening upon aging.

4,941
ROSE PLANT

Pernille Olesen, and Mogens Olesen, both of 58 Kelleriisvej, DK 3490 Kvistgaard, Denmark

Filed Jun. 29, 1981, Ser. No. 278,186
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—12 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as shown and described, characterized particularly by flowers of unusual red and silvery yellow bicoloring resistant to fading upon aging.

4,942
NECTARINE TREE (87-101)

John H. Weinberger, Fresno, Calif., assignor to Superior Farming Company, Bakersfield, Calif.

Filed Jul. 13, 1981, Ser. No. 282,927
Int. Cl.[3] A01H *5/03*
U.S. Cl. Plt.—41 **1 Claim**

1. A new and distinct variety of nectarine tree, substantially as illustrated and described, particularly characterized by freestone fruit in harvest about one week later than the fruit of the Summer Grand.

4,943
GRAPEVINE

Elmer Swenson, Rte. 2, Box 118, Osceola, Wis. 54020

Filed Feb. 11, 1981, Ser. No. 233,686
Int. Cl.[3] A01H *5/03*
U.S. Cl. Plt.—47 **1 Claim**

1. A new and distinct variety of grapevine, substantially as shown and described herein, characterized particularly as to novelty by the unique combination of winter hardiness down to −40° F. in northern Wisconsin, producing white table grapes of fine eating quality, and with vigorous vines which are resistant to mildew.

4,944
MAPLE CALLED DEBORAH

John Mathies, Chilliwack, Canada, assignor to John Holmlund Nursery Co., Gresham, Oreg.

Filed Sep. 17, 1980, Ser. No. 188,012
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—51 **1 Claim**

1. A new and unique variety of Norway maple tree, as herein described and shown, characterized by a vigorous, oval-rounded growth habit; strong, sturdy trunk; excellent insect and disease resistance; and unique leaf development; the new leaves are a rich ruby-red and display a unique wrinkled-crinkled appearance. The margins are crinkled and undulating, giving the entire tree a bright almost sparkling appearance; as the leaves mature, the ruby-red color changes to deep maroon and finally dark green; the entire color metamorphosis takes place over a 4 to 6 week period; the emerging and newly developing leaves make the tree appear as if it is in flower, gradually this strong focal point is softened as the leaves mature.

4,945
VARIETY OF STREPTOCARPUS NAMED DOLLY

Gerhard Fleischle, Vaihingen, Fed. Rep. of Germany, assignor to Oglevee Associates, Inc., Connellsville, Pa.

Filed Nov. 5, 1980, Ser. No. 204,202
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct variety of Streptocarpus substantially as herein shown and described.

4,946
DISTINCT VARIETY OF STREPTOCARPUS NAMED LADY

Gerhard Fleischle, Vaihingen, Fed. Rep. of Germany, assignor to Oglevee Associates, Inc., Connellsville, Pa.

Filed Nov. 5, 1980, Ser. No. 204,346
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct variety of Streptocarpus substantially as herein shown and described.

4,947
DISTINCT VARIETY OF STREPTOCARPUS NAMED NICKY

Gerhard Fleischle, Vaihingen, Fed. Rep. of Germany, assignor to Oglevee Associates, Inc., Connellsville, Pa.

Filed Nov. 5, 1980, Ser. No. 204,349
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct variety of Streptocarpus substantially as herein shown and described.

4,948
DISTINCT VARIETY OF STREPTOCARPUS NAMED HERA

Gerhard Fleischle, Vaihingen, Fed. Rep. of Germany, assignor to Oglevee Associates, Inc., Connellsville, Pa.

Filed Nov. 5, 1980, Ser. No. 204,350
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct variety of Streptocarpus substantially as herein shown and described.

4,949

CHRYSANTHEMUM PLANT

Fred B. Hartmann, 867 Dickson St., Kirkwood, Mo. 63122

Filed Mar. 9, 1981, Ser. No. 241,722
Int. Cl.³ A01H 5/00
U.S. Cl. Plt.—78 1 Claim

1. A new and distinct cultivar of chrysanthemum plant known by the cultivar name Hartmann's Gold Dignity, as described and illustrated, and particularly characterized by its deep and solid yellow flower color, large and compact flower head, and its abundant petallage.

4,950

POINSETTIA NAMED PINK CURLY

Paul Ecke, Jr., Encinitas, Calif., assignor to Paul Ecke Ranch, Encinitas, Calif.

Filed Apr. 20, 1981, Ser. No. 255,819
Int. Cl.³ A01H 5/00
U.S. Cl. Plt.—86 1 Claim

1. A new and distinct poinsettia cultivar, substantially as herein shown and described, distinguished by its many bracts of a solid pink overall color which appear in overlapping arrangement and tightly centered about the central cluster of flowers, the long tips of the bracts tending to form a counterclockwise swirl.

4,951

POINSETTIA NAMED WHITE CURLY

Paul Ecke, Jr., Encinitas, Calif., assignor to Paul Ecke Ranch, Encinitas, Calif.

Filed Apr. 20, 1981, Ser. No. 255,820
Int. Cl.³ A01H 5/00
U.S. Cl. Plt.—86 1 Claim

1. A new and distinctive white curly poinsettia plant, substantially as herein shown and described, distinguished by the puckered and severely arching effect of its leaves and bracts, and by its abundant and closely centered bracts which have an overall yellowish white color.

4,952

POINSETTIA NAMED RED CURLY

Paul Ecke, Jr., Encinitas, Calif., assignor to Paul Ecke Ranch, Encinitas, Calif.

Filed Apr. 20, 1981, Ser. No. 255,821
Int. Cl.³ A01H 5/00
U.S. Cl. Plt.—86 1 Claim

1. A new and distinctive poinsettia cultivar, substantially as herein shown and described, distinguished by the unique puckered and curled shape of the leaves and bracts, the bracts having a solid and overall dark red color and being in a generally imbricated arrangement so as to form a cushion-like appearance around the flowers of the plant.

PATENTS

GRANTED NOV. 16, 1982

ERRATA

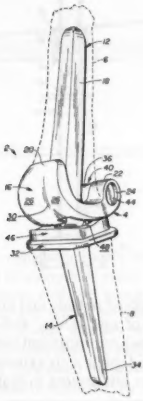
For CLASS	See PATENT NO.
114–363	4,358,866
374–026	4,358,948
374–007	4,358,953
374–134	4,358,957
177–140	4,359,099
523–216	4,359,342
523–200	4,359,414
548–562	4,359,422
548–427	4,359,423
549–416	4,359,424
378–050	4,359,638
378–150	4,359,642
378–119	4,359,660

PATENTS

GRANTED NOVEMBER 16, 1982

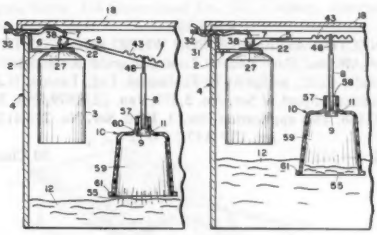
GENERAL AND MECHANICAL

4,358,859
ARTICULATED PROSTHETIC KNEE AND METHOD FOR IMPLANTING SAME
David J. Schurman, 1044 Verier Pl., and Robert L. Piziali, 611 Salvatierra, both of Stanford, Calif. 94305
Filed Oct. 4, 1979, Ser. No. 81,713
Int. Cl.³ A61F *1/03*
U.S. Cl. 3—1.911 **3 Claims**



1. An articulated knee prosthesis comprising a femoral implant including a condyle section and an elongated femoral stem protruding from the section for implantation in the femoral canal of a patient; a tibial implant including a tibial plateau section and an elongated tibial stem protruding from the plateau section for implantation in the tibial canal of a patient; the implants defining an anterior implant portion and a posterior implant portion; hinge means interconnecting the implants, positioned proximate the posterior portions of the implants and permitting relative pivotal motion of the implants about a pivot axis defined by the hinge means between an extended position in which the stems are in substantial alignment and a flexed position in which the stems are obliquely inclined relative to each other; the pivot axis being oriented transversely to the stems and positioned relative to the stems so that the implantation of the stems in the respective canals causes a shift in the position of the patient's tibia relative to the femur in an anterior direction as compared with the anatomically normal position of the tibia with respect to the femur; means constructed of a resilient material, disposed between the implants and shaped and positioned to engage the sections of the implants when the implants are in their extended position and to prevent movement of the implants beyond the extended position; the resilient means comprising a plate member having upper and lower surfaces shaped to correspond to opposing surfaces defined by the implant sections for engaging such surfaces and thereby limiting relative movement between the implants beyond the extended position; the tibial plateau section defining a generally flat platform, and including means for securing the plate member to the platform; and the securing means comprising at least one post protruding from the plate member towards the platform and having a length greater than a corresponding thickness of the platform, and an aperture formed in the platform sized and positioned to receive the post so that a free end of the post protrudes from an underside of the platform facing the patient's tibia; whereby upon the implantation of the tibial implant and its attachment to the patient's tibia with cement, the cement also bonds to the post and thereby structurally integrates the post with the platform, the cement and the patient's tibia.

4,358,860
AUTOMATIC ACTUATOR FOR AIR FRESHENER DISPENSER OR THE LIKE FOR TOILETS
David R. Church, Wyoming, Mich., assignor to Amway Corporation, Grand Rapids, Mich.
Filed Mar. 5, 1981, Ser. No. 240,996
Int. Cl.³ E03D *9/02*
U.S. Cl. 4—228 **18 Claims**



1. An automatic actuator for actuating the product release mechanism of a product container mounted within a toilet tank, said automatic actuator comprising:

an actuator arm having one end thereof adapted for operable connection to the product release mechanism of the container;

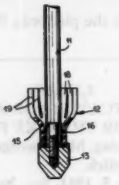
a pull rod having one end thereof suspended from the other end of said actuator arm, and including a valve head connected with the other end of said pull rod; and

a cup having an open lower end, and a closed upper end with a valve seat defining an opening therein in which said valve head is matingly received and selectively reciprocates, whereby as the water level in the toilet tank descends, said cup and valve seat are pulled sealingly against said valve head by the weight of the water in the unbuoyed portion of the cup, which weight moves the product release mechanism to dispense product from the container, and whereby when the descending water level drops below said cup lower end, the water trapped in said cup is released suddenly into the toilet tank, thereby quickly releasing the weight applied to said actuator arm and permitting the product release mechanism to return to its initial position, and whereby as the water level rises in the tank, air is displaced from said cup by lifting said cup off of said valve head and exhausting the air through said opening defined by said valve seat so that said cup refills at least partially with water.

4,358,861
DRAINPIPE CLEANER
Juan A. Sard, 41-83 Frame Pl., Flushing, N.Y. 11355
Filed Nov. 20, 1980, Ser. No. 208,771
Int. Cl.³ B08B *9/02;* **E03D** *11/00*
U.S. Cl. 4—255 **5 Claims**

1. An implement for dislodging a lump of matter obstructing a drainpipe, comprising an elongate handle and an upwardly open cup secured to the lower end of said handle, said cup being provided with slits extending from an upper rim down and dividing the periphery thereof into a plurality of petal-shaped leaves which are sufficiently flexible to yield inward when the cup is thrust down a water-filled pipe whose inner diameter substantially equals the outer diameter of the cup at

said rim, said leaves tending to diverge upwardly while hugging the pipe wall under the weight of the water accumulated



therein when the cup is being pulled up with creation of suction therebelow in said pipe.

4,358,862

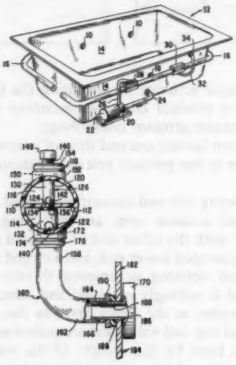
CONNECTOR ASSEMBLY FOR WHIRLPOOL SYSTEM

Murray Altman, Fort Lee, N.J., and Gerald J. Bellasalma, Glendale, Calif., assignors to Thermasol, Ltd., Leonia, N.J.

Continuation-in-part of Ser. No. 5,377, Jan. 22, 1979, Pat. No. 4,240,166. This application Dec. 3, 1980, Ser. No. 212,413

Int. Cl.³ A47C *19/12*

U.S. Cl. 4—542 **50 Claims**



1. A connector assembly for use in a whirlpool system, which includes a water supply channel and an air supply channel, comprising a nozzle insertable into the water and air supply channels, said nozzle including a passageway extending therethrough, first providing means for providing fluid communication between said passageway and the water supply channel, and second providing means, spaced from said first providing means, for providing fluid communication between said passageway and the air supply channel, the portion of said passageway between said first and second providing means including a venturi.

4,358,863

SHOWER ENCLOSURE

Ralph E. Jacobsen, Mountain Rd., Stowe, Vt. 05672

Filed Nov. 26, 1979, Ser. No. 97,732

Int. Cl.³ A47K *3/14*; A47H *15/04*; E05D *15/06*

U.S. Cl. 4—607 **6 Claims**

1. A shower enclosure structure for confinement within the interior of a bathtub comprising; a continuous top rail extending along one surface of the area of the bathtub to be enclosed, a pair of wheel tracks attached to said top rail, a pair of sliding doors, each of which includes support wheels, the support wheels of each door being received in one of said tracks, said top rail extending along the entire width of said pair of sliding doors, and a guide rail system spaced vertically below said top rail and adjacent the upper portion of the sliding doors, said guide rail system including stabilizing means for stabilizig said doors in parallel vertical planes, said stabilizing means including a first guide rail disposed between said pair of sliding doors,

an outer guide rail disposed outside said enclosure adjacent the outer surface of one of said doors, and an inner guide rail disposed within said enclosure adjacent the inner surface of the other of said doors, said guide rails extending along the width of the sliding doors for attachment to walls of the enclosure.

4,358,864

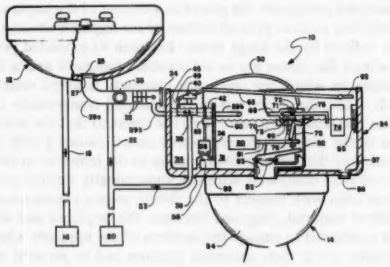
COMBINATION WASH BASIN AND TOILET CONSERVATION SYSTEM

Juan M. Medrano, Mexicali, Baja California, Mexico

Filed May 4, 1981, Ser. No. 260,368

Int. Cl.³ A47K *4/00*

U.S. Cl. 4—665 **21 Claims**



1. A combination wash basin and toilet water conservation system comprising:

at least one wash basin having a drain in its bottom;

a toilet having a water tank, said water tank having a fresh water chamber and a gray water chamber, a first outlet connecting said gray water chamber with the bowl of said toilet and a first valve member closing said first outlet, a second outlet connecting said fresh water chamber and said gray water chamber and a second valve member closing said second outlet;

means connecting the drain of said wash basin to said gray water chamber of said water tank;

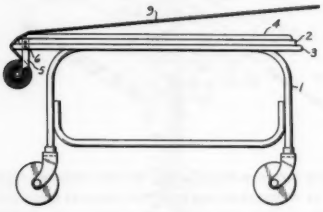
a source of fresh water and means connecting said source of fresh water to said fresh water chamber of said water tank; and

means for flushing said toilet.

4,358,865
DISPOSABLE SHEET SYSTEM FOR PATIENT STRETCHER

Kenneth L. Pagel, Manitowoc; Lester A. Mueller, Kewaunee, both of Wis., and Gary E. Nei, Stone Mountain, Ga., assignors to American Hospital Supply Corporation, Evanston, Ill.

Filed Oct. 29, 1979, Ser. No. 88,892
Int. Cl.[3] A47G 9/02; A61G 7/00
U.S. Cl. 5—81 B 6 Claims

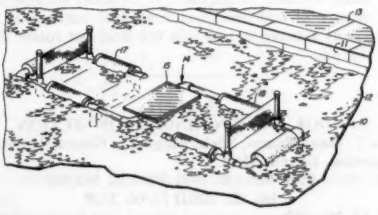


1. A patient supporting structure which has a mattress pad and an attached roll of disposable sheet material, wherein the improvement comprises: said roll being in a continuous form that is free of connecting seams between sheet sections, said continuous form roll having a series of transverse weakened manually frangible sections that are held together by the sheet material itself in an unseamed structure, and said frangible sections are longitudinally separated by a distance substantially greater than the longitudinal length of the mattress, and the material is substantially uniform and unweakened between the longitudinally spaced frangible sections; wherein said sheet material has an upper layer of absorbent nonwoven cellulosic material having a fiber orientation in the longitudinal direction of the sheet material whereby each transverse frangible section cuts laterally across the longitudinally oriented fibers; and a bottom layer of water impervious thermoplastic film laminated thereto.

4,358,866
AMPHIBIOUS FURNITURE

Roger D. Rhodes, 6125 E. Indian School Rd. #268, Scottsdale, Ariz. 85251

Filed Oct. 25, 1979, Ser. No. 88,038
Int. Cl.[3] B63C 9/08
U.S. Cl. 114—363 6 Claims

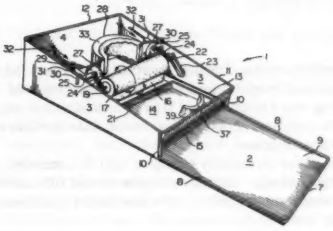


1. A kit for the erection of amphibious furniture comprising:
a plurality of chairs, each of said chairs having
a frame having a pair of sides held in spaced substantially parallel relationship and substantially defining a plane;
a brace connecting said sides and substantially lying in the plane determined by the sides;
a plurality of legs;
means for removably securing said legs to said frame, said legs when secured to said frame supporting said sides and brace a predetermined distance above a solid surface;
flotation elements substantially uniformly surrounding each of the sides and the brace;
a table having a table frame;
a top surface connected to said table frame; and
means for removably securing said chairs to said table, said chairs supporting said table so that said table is substantially parallel to the plane of the sides of said chairs, said chairs adapted to float in water, to support a person sitting in each chair, and to support said table connected to said chairs.

4,358,867
SHOE CLEANING DEVICE

Sophia Berta, 224 Queensland Dr., SE., Calgary, Alberta, Canada (T2J 3R8)

Filed Feb. 17, 1981, Ser. No. 235,698
Claims priority, application Canada, Nov. 17, 1980, 364781
Int. Cl.[3] A47L 23/22
U.S. Cl. 15—36 4 Claims



1. A device for cleaning a footwear sole comprising a casing; first roller means rotatably mounted in said casing; first pad means on said roller means for cleaning a footwear sole when the sole is pressed against said first pad means and reciprocated in a direction perpendicular to the direction of rotation of said first roller means; second roller means rotatably mounted in said casing; second pad means on said second roller means in substantially constant engagement with said first pad means for cleaning said first pad means when said first and second roller means are rotated; tray means in said casing for holding a sole cleaning liquid; and guide means in said casing permitting movement of said first roller means from a rest position to an operating position in which said first pad means contacts said cleaning liquid, whereby rotation of said first roller means effects transfer of the cleaning liquid to the sole; spring means for normally resiliently retaining said first roller means in said rest position and for returning said first roller means to said rest position upon completion of a sole cleaning operation.

4,358,868
HIGH SPEED FLOOR POLISHER

Floyd L. Cook, Jr., Muskegon Heights, Mich., assignor to McGraw-Edison Company, Rolling Meadows, Ill.

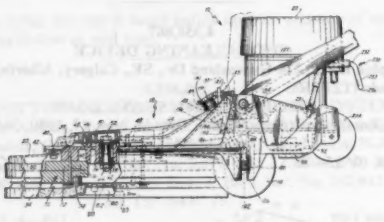
Filed May 12, 1980, Ser. No. 149,004
Int. Cl.[3] A47L 11/162
U.S. Cl. 15—49 R 16 Claims

1. Apparatus for rotating a vertical axis floor treating element, said apparatus comprising:
a frame;
a pair of ground engaging wheels;
suspension means engaging said frame for suspending said frame on said ground engaging wheels comprising an axle extending transversely of said frame, said ground engaging wheels being rotatably mounted on said axle, said

suspension means permitting said frame to pivot about a fore and aft longitudinal axis;

a pair of depending leg-like members carried by said frame, said leg-like members defining generally vertical slots within which said axle rides;

spring means extending downwardly from said frame and engaging said axle and said frame for suspending said frame and biasing said frame to a generally horizontal position with respect to said axle, and for permitting said frame to pivot about said fore and aft longitudinal axis while said wheels remain in contact with the floor to thereby permit edging by the floor treating element;



said suspension means further comprising vertical adjustment means carried by said frame and engaging said axle for raising and lowering said frame on said axle comprising a first member carried by said frame and rotatable with respect to said frame;

a second member threadably engaging said first member and secured to said axle whereby rotation of said first member shifts said second member to raise and lower said frame on said axle; and

drive means on said frame for rotating the floor treating element.

4,358,869

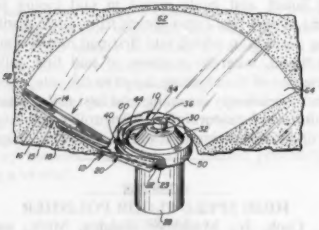
WIPER ARM DRIVING MECHANISM

Andrew Frankus, Valparaiso, Ind., assignor to The Anderson Company of Indiana, Gary, Ind.

Filed Jun. 19, 1981, Ser. No. 275,326

Int. Cl.³ B60S *1/24*

U.S. Cl. 15—250.3 **7 Claims**



4. A device for reciprocating a windshield wiper arm driven by a motor disposed within a housing, comprising:

a follower having first and second ends pivotally secured to the housing, said follower having a slot therein extending between said first and second ends;

a driving member driven by the motor for rotation about an axis;

means connected to said driving member and engaging the follower slot to convert the rotary motion of the driving member into reciprocating motion of the follower; and

a driven member reciprocable with said follower and connected to the wiper arm to reciprocate the wiper arm as said driving member is rotated.

4,358,870

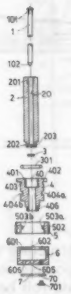
HYDRAULIC HINGE WITH DOOR CLOSING MECHANISM

Chang H. Hong, 36, Lane 530, Sec. 1, Chung-Shan Rd., Chang-Hua City, Taiwan

Filed Aug. 14, 1980, Ser. No. 177,938

Int. Cl.³ E05F *3/04*

U.S. Cl. 16—53 **5 Claims**



1. An apparatus capable of closing automatically a door on which the apparatus is mounted, which comprises:

a cylindrical casing having at least one protrusion thereon and a first stop device thereon, said casing preferably being mounted on one side of the door;

a cover mounted on the top of said casing and having an opening therein;

a piston in said casing having a hexagonal piston stem extending through the opening in said cover, and a piston head provided with a second stop device and at least one inclined groove thereon for receiving the protrustion on said casing, the lower portion of said inclined groove having an upwardly curved portion acting as a non-return device;

a spiral reversing spring whose upper and lower ends are fixed on the first and second stop devices of said casing and said piston respectively;

hydraulic means attached integrally to said piston head and placed in the lower portion of said casing for buffering the movement of said piston during the operation; and

a seat having a hexagonal hole therethrough for slidably receiving said hexagonal piston stem, said seat preferably being mounted on the frame of the door, whereby during closure of said door said hexagonal piston stem slides axially relative to said seat but does not rotate relative thereto.

4,358,871

HOOK AND PIN HINGED CONNECTION

Akio T. Takai, Romeo, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 20, 1981, Ser. No. 245,746

Int. Cl.³ E05D *11/06, 5/08*

U.S. Cl. 16—262 **2 Claims**

1. A molded hinge mechanism comprising,

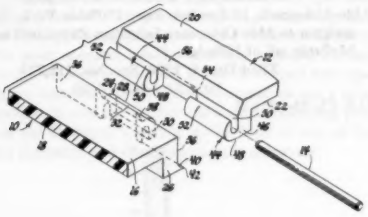
first and second hinge members, each having at least one barrel portion provided with an open linear slot, said slots opening oppositely of each other and being axially aligned,

a hinge pin axially insertable in the aligned open slots to pivot the hinge members together for relative rotative movement about a hinge axis,

each hinge member further including an outer convex semi-

cylindrical surface on the bight of the barrel portion generated about the hinge axis,

each hinge member further including a complementary concave semi-cylindrical surface also generated about the hinge axis and slidably engageable with the convex semi-cylindrical surface on the barrel portion of the other hinge member,



the hinge members further including stop means adjacent the convex and concave surfaces and engageable as the hinge members rotate about the hinge axis to limit the relative rotation of the hinge members about the hinge axis and maintain the hinge pin in the axially aligned open slots,

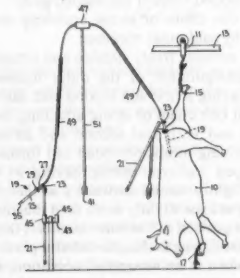
the slidable engagement of the respective convex and concave semi-cylindrical surfaces preventing the separation of the hinge members as they rotate relative to one another about the hinge axis.

4,358,872

APPARATUS FOR TENDERIZING MEAT

Mordecai M. VanZandt, 11809 Stonington Pl., Silver Spring, Md. 20902

Filed Jan. 6, 1981, Ser. No. 222,922
Int. Cl.³ A22B *5/00*; A22C *9/00*
U.S. Cl. 17—1 R **12 Claims**



1. A rectal probe for use in tenderizing a meat carcass comprising:

a hollow metal tube having first and second ends;

a solid tip of electrically conductive metal secured to and coaxially projecting from said first end of said tube, said tip having a convergingly tapered forward end, remote from said first end, and suitable for insertion into the rectum of said carcass; and

electrical conductor means extending through said tube into contact with said tip for applying voltage to said tip;

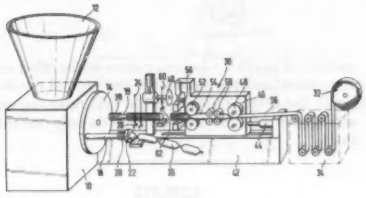
wherein said solid tip and said metal tube are made of two different metals.

4,358,873

PROCESS AND APPARATUS FOR AUTOMATED MANUFACTURE OF LINK SAUSAGES HAVING CASINGS FORMED OF SYNTHETIC TUBULAR MATERIAL

Gunter Kollross, Am Wallerstadter Weg 20, 6081 Dornheim, Fed. Rep. of Germany

Filed Sep. 17, 1980, Ser. No. 188,045
Claims priority, application Fed. Rep. of Germany, Sep. 22, 1979, 2938371; Oct. 16, 1979, 2941872
Int. Cl.³ A22C *11/02*
U.S. Cl. 17—33 **19 Claims**



1. An apparatus for the production of link sausages, comprising:

a shirring means for receiving an unshirred tubular length of sausage casing material and shirring it, forming folds taken in the axial direction,

a stuffing horn for receiving forcemeat and delivering the forcemeat into the tubular sausage casing material thereon,

means for positioning the shirred tubular material on the stuffing horn with the stuffing horn positioned at the location to receive forcemeat and deliver it into the tubular casing material, filling the tubular casing and pulling out the shirring folds,

and clamping means for closing off the filled sections of the tubular casing to form the separate sausage links,

the location of the stuffing horn during filling of said shirred tubular casing thereon being spaced from the location at which the shirring means forms a length of shirred tubular casing material, so that a further length of tubular casing material can be shirred by the shirring means while the first said shirred length of tubular casing material is being filled with forcemeat and formed into separate sausage links.

and including means for mounting a source of flattened, unshirred tubular casing material and delivering the same to the shirring means, and a moistening means between the source and the shirring means for moistening the tubular casing material to a moisture content sufficient for the step of filling the tubular casing material with forcemeat.

4,358,874

RETAINING DEVICE

Theodore Kaiser, Bensenville, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 31, 1980, Ser. No. 203,072
Int. Cl.³ F16B *41/00*; A44B *21/00*
U.S. Cl. 24—90.5 **14 Claims**

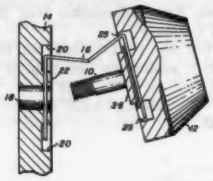
1. A retaining arrangement as for retaining a component on an associated piece of equipment, the equipment having an aperture in a wall thereof, and comprising:

shaft;

first retaining means having 2n serially connected sections, where n is an integer greater than one, each section predisposed to remain at an angle to each adjacent section, and having a first aperture in one end section, a second aperture in the other end section, and a third aperture in the combined center sections, each aperture being larger than the shaft diameter;

second retaining means for rotatably retaining the first end section of the first retaining means on a first one of the component and the equipment and around the shaft;

third retaining means for retaining the other of the end



sections of the first retaining means on the other one of the component and the equipment and around the shaft; and

wherein the center sections of the first retaining means are arranged in a folded configuration on only one side of the shaft.

4,358,875

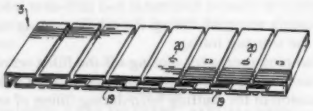
SECURITY BUCKLE FOR WRIST WATCH METAL BRACELETS

Marcel Solomon, 2553 Yonge St., Toronto, Ontario, Canada (MaP 2H9)

Continuation of Ser. No. 934,971, Aug. 18, 1978, Pat. No. 4,237,585, which is a continuation-in-part of Ser. No. 781,461, Mar. 25, 1977, abandoned. This application Mar. 6, 1980, Ser. No. 127,721

Int. Cl.³ A44B *11/20*; F16G *13/00*

U.S. Cl. 24—190 **3 Claims**



1. A security buckle for attaching together two portions of a band comprising:

a first frame work having a pair of longitudinally disposed lateral side walls interconnected by a first traverse element at a forward end of the sidewalls and a second traverse element at the rearward end of the sidewalls,

a second frame work fitted within said first frame work for limited sliding movement with respect to said first frame work between a first and second relative rest position, said second frame work including a downwardly projecting traverse portion, and a raised spur adapted to abut said first traverse element,

an inflexible removable third traverse element mounted to and extending between said sidewalls and disposed under said second traverse element, said third traverse element positioned to cooperate with said traverse portion to lock said second frame work against rearward sliding movement with respect to the first frame work, said third traverse element being attachable to one of said two band portions, said second traverse element and inflexible removable traverse element forming a space therebetween, said space being partially occupied by a rearward portion of said second frame work,

a locking band attachable to the other of said two band portions to form the end part thereof, said locking band comprising a plurality of successively connected identical links, each link being a two-piece assembly comprising a first rectangular housing piece including a pair of integral L-shaped claws at opposite longitudinal ends thereof extending outwardly therefrom in a widthwise direction of said housing piece for engaging with an adjacent link in said band, and a spring plate second piece mounted in said rectangular housing for engaging with the claws of an adjacent link to bias the claws and hold the links in a predetermined position, at least some of said links containing holes in respective housing pieces for engaging with said raised spur.

4,358,876

NECKLACE RETAINING CLASP

Aldo Colognori, 69 Lawton Ave., Cliffside Park, N.J. 07010, assignor to Aldo Colognori; Sebastian Zappichini and Thomas McBride, all of Hillsdale, N.J.

Filed Dec. 1, 1980, Ser. No. 211,733

Int. Cl.³ A44B *17/00*

U.S. Cl. 24—211 R **17 Claims**

1. A readily separable and joinable retaining clasp for a necklace, bracelet and the like, this clasp preferably of cylindrical configuration and including:

(a) an outer member which is generally tubular in configuration and having opposed apertures providing retaining means formed in the sidewalls thereof with said formed apertures intermediate the ends of said member, the tubular portion having a first open end and a second end sufficiently closed to provide a retaining means at and in said second end;

(b) a bias means carried within the outer member and secured at the second end, this bias means adapted to slide within said tubular outer member to provide a thrust force toward the open end of the outer member when said bias means is moved toward the second end;

(c) at least one chain or string attaching means provided with and by said outer member;

(d) an inner member freely slidable and rotatable within the tubular configuration of the outer member, said inner member having a first and second end, said first end having at least one chain or string attaching means provided therewith and with said second end having a leaf-type spring retaining means provided and formed thereon;

(e) a U-shaped leaf-type spring having its extending leg portions slightly canted outwardly so that the legs extend outwardly at least slightly more than the inner diameter of the tubular portion of the outer member, the extending leg portions less in length than the tubular portion of the outer member when in an assembled condition, said extending leg portions having each leg formed with a further outwardly extending portion sized and shaped so as to enter and engage one of the opposed apertures when brought in way thereof;

(f) means for securing said U-shaped leaf-type spring at its midportion to said inner member at or near its second end and in said leaf-type spring retaining means so that the leg portions of said U-shaped leaf-type spring are movable outwardly to engage the tubular portion of the outer member and with the unsecured and further outwardly extending portions of said U-shaped leaf-type spring adapted to enter and be retained in said opposed aperture retaining means, and

(g) means for providing in the sides of the inner member

recesses into which the leg portions of the U-shaped leaf-type spring may enter during insertion of the inner member into said outer member for retention, whereby the insertion of the inner member into the outer member causes the leg portions of the U-shaped leaf-type spring to be canted inwardly to slide within the inner diameter of the tubular portion and by manipulation the further outwardly extending leg portions of the U-shaped leaf-type spring are caused to enter the opposed formed apertures and the bias means engages and urges the inner member outwardly and disengagement is easily achieved by moving the inner member against said bias until the further outwardly extending portions of the U-shaped leaf-type spring are cammed from the formed apertures and a rotative motion moves the further outwardly extending portions of the U-shaped leaf-type spring from in way of the formed apertures and disengagement is achieved.

4,358,877

BUCKLES FOR VEHICLE SEAT BELT SYSTEM

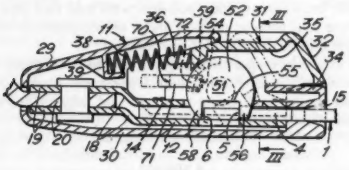
David Burke, Carlisle, England, assignor to Kangol Magnet Limited, Cumbria, England

Filed Aug. 27, 1979, Ser. No. 69,983

Claims priority, application United Kingdom, Oct. 12, 1978, 40348/78; Nov. 1, 1978, 42716/78

Int. Cl.³ A44B *11/26*

U.S. Cl. 24—230 A **21 Claims**



1. A buckle for use in a vehicle seat belt system comprising tongue means and cooperating socket means:

said tongue means comprising a tongue and latch formation means on said tongue; and

said socket means having means providing a socket adapted to receive said tongue therein;

latch means having a latching position in which said latch means engages said latch formation means when said tongue is in said socket to thereby latch said tongue means and said socket means together, said latch means being movable from said latching position to a release position in which said tongue can leave said socket;

catch means having a catch position in which said catch means engages said latch means to hold said latch means in said latching position and movable from said catch position in a direction substantially parallel to said direction of movement of said tongue to free said latch means for movement to said release position;

release means manually movable to effect movement of said catch means from said catch position to free said latch means; and

means mounting said latch means, said catch means and said release means on said socket means with said catch means located intermediate said release means and said socket.

4,358,878

PLUG-IN FASTENER FOR MOTOR VEHICLE SAFETY BELTS

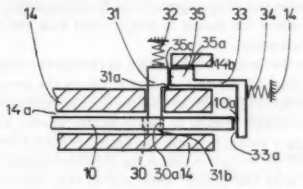
Holger Seel, Hamburg, Fed. Rep. of Germany, assignor to Autoflug GmbH, Rellingen, Fed. Rep. of Germany

Continuation of Ser. No. 921,262, Jul. 3, 1978, abandoned. This application Sep. 17, 1980, Ser. No. 188,069

Claims priority, application Fed. Rep. of Germany, Jul. 2, 1977, 2730003

Int. Cl.³ A44B *19/00*; E05B *63/20*

U.S. Cl. 24—230 A **6 Claims**



1. A fastener in combination with a motor vehicle seat belt wherein the fastener comprises:

an elongated tongue attached to the belt, said tongue having a leading edge and a recessed portion displaced longitudinally from the leading edge, the recessed portion including a shoulder which faces in the opposite direction from the leading edge;

a housing for anchoring the belt, the housing including a slot for receiving the tongue, the slot having a lateral opening therein positioned adjacent to the shoulder on the tongue when the tongue is inserted into the slot;

a locking mechanism for holding the tongue in the slot at a particular position to insure that the tongue will not slip from the slot when a longitudinal inertial force is placed on the tongue, the locking mechanism including:

a detent mounted adjacent the opening in the housing for projection and retraction through the lateral opening, the detent having first and second abutment surfaces thereon facing in the same direction as the leading edge of the tongue when the tongue is inserted into the slot, the second abutment surface being positioned outside of the slot regardless of whether or not the detent is projected or retracted;

first spring means disposed between the detent and housing for urging the detent through the opening in the slot to abut the first abutment surface with the shoulder on the tongue means to thereby lock the tongue means in the slot;

shoulder means positioned on the detent means and facing the slot at a location external of the slot when the detent is held out of the slot against bias of the first spring means;

a rigid, unitary trigger means having a first surface thereon outside of the slot and facing the shoulder on the detent means to hold the detent means retracted upon engaging the shoulder on the detent means, the trigger means having a second surface thereon extending across the slot and displaced inwardly of the opening for engagement by the leading edge of the tongue when the tongue is inserted into the slot, and the trigger means having a third surface facing the second abutment surface of the detent, the third surface being displaced from the second surface by a distance slightly greater than the distance between the shoulder on the tongue and the leading edge of the tongue,

means for constraining movement of the trigger between a detent retaining position in which the first surface of the trigger means engaged the shoulder on the detent and a release position in which the first surface is displaced from the shoulder on the detent allowing the detent to project and engage the shoulder on the tongue said constraining means positioning the trigger means in its release position with the second surfaces thereof spaced a distance from

the abutment surface of the detent which distance is slightly greater than the distance between the shoulder on the tongue and the leading edge of the tongue, and

second spring means positioned adjacent to the end of the slot and engaging the trigger means for urging the trigger means toward the detent;

whereby:

the detent is held retracted by the first surface of the trigger means until the leading edge of the tongue has moved far enough into the slot to abut the second surface of the trigger means and to move the first surface of the trigger means out of engagement with the shoulder on the detent to allow the detent to project and lock the tongue,

and whereby

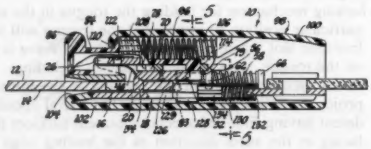
when the detent is withdrawn to release the tongue, the third surface of the trigger means clears the second abutment surface of the detent and the second spring means pushes the trigger means to position the second surface of the trigger means beneath the shoulder means on the detent to hold the trigger beneath the shoulder means on the detent to hold the detent retracted so that the tongue can be freely withdrawn.

4,358,879

SEAT BELT BUCKLE

Joseph J. Magyar, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 1, 1980, Ser. No. 211,632
Int. Cl.³ A44B *11/25*
U.S. Cl. 24—230 A **2 Claims**



1. A buckle adapted for selective engagement with an apertured latch plate comprising:

a housing adapted to slidably receive the apertured latch plate;

a detent having a latch tab;

pivot means mounting the detent on the housing for pivotal movement between a latched position inserting the latch plate tab in the latch plate aperture and an unlatched position permitting latch plate entry and exit;

spring means biasing the detent to the unlatched position;

a keeper slidably movable on the housing between an extended position overlying the detent to block detent movement to the unlatched position and a retracted position permitting detent movement to the unlatched position;

a pushbutton slidably mounted on the housing for extension and retraction and adapted to retract the keeper upon pushbutton retraction so that the keeper is retracted from blocking engagement to the detent;

spring means returning the pushbutton to the extended position subsequent to each retraction;

abutment means acting between the keeper and the detent to maintain the keeper in a retracted position when the detent is in the unlatched position; and

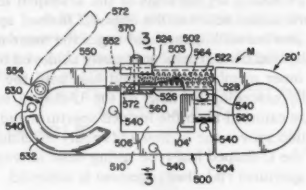
flexure means attached to and extending from the detent into the path of latch plate entry so that the latch plate engages the flexure means to pivot the detent to the latched position.

4,358,880

QUICK RELEASE SNAP

Alexander Garcia, Berlin, Conn., assignor to Gulf & Western Manufacturing Company, Southfield, Mich.

Filed Jul. 3, 1980, Ser. No. 165,738
Int. Cl.³ A44B *13/02*
U.S. Cl. 24—241 PS **7 Claims**



1. An hardware snap of the quick release type comprising:

a generally flat, elongated, sheet metal body having a fixed load supporting hook with a free end and an open side;

means forming an elongated tubular sheet metal portion on said body with an outer cylindrical surface and an end facing generally toward said free end of said hook;

said fixed hook extending radially and axially of said tubular portion and having a load bearing portion preceding said free end in the direction of extension;

a locking sleeve reciprocally mounted onto said outer cylindrical surface;

spring means in said tubular portion for biasing said sleeve toward said end of said tubular portion and, thus toward said free end of said hook;

a locking finger with first and second ends and having a cam surface at said first end;

means for pivotally mounting said finger by said second end on said free end of said hook and about an axis generally perpendicular to said flat body, said locking finger movable between an open position with said first end spaced from said tubular portion and a closed position with said first end in said tubular portion and,

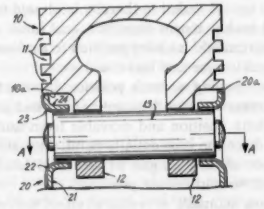
said sleeve having a camming portion to be engaged by said cam surface for forcing said sleeve away from said finger and against said spring means as said finger is moved into said closed position.

4,358,881

METHOD FOR MANUFACTURING A PISTON WITH A SEPARATE SKIRT

Duraid Mahrus, and Georg Daxer, both of Sao Paulo, Brazil, assignors to Metal Leve S/A Industria e Comercio, Brazil

Filed Sep. 11, 1979, Ser. No. 74,802
Claims priority, application Brazil, Sep. 15, 1978, 7806090
Int. Cl.³ B23P *15/10*; F16J *1/02*
U.S. Cl. 29—156.5 R **8 Claims**



1. A method for manufacturing a piston for internal combustion engines, compressors, and the like, the piston including a head portion and a separate skirt portion, comprising the steps of:

providing a strip of steel;
bonding a layer of antifriction material to one of the surfaces of the steel strip;
cutting, forming and locking the steel strip into a substantially cylindrical shape subsequent to said bonding step to form the skirt portion with said antifriction material on the outer surface of said skirt portion, forming a pair of articulation holes in said skirt portion, the walls of which include said antifriction material; and
articulating the head portion to the skirt portion such that the same do not contact each other during operation.

4,358,882

MANUFACTURE AND INSPECTION OF AN ARTICLE

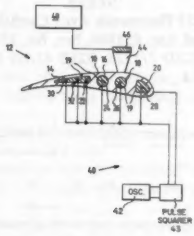
Bernard H. Wilkinson, Skipton, England, assignor to Rolls-Royce Limited, London, England

Filed May 16, 1980, Ser. No. 150,671

Claims priority, application United Kingdom, Jun. 6, 1979, 7919729

Int. Cl.³ B23P *15/02;* **B22D** *2/00*

U.S. Cl. 29—156.8 H **4 Claims**



1. A method of producing a passaged turbine blade and inspecting it, comprising the steps of:
forming a core of leachable ferro-electric ceramic material in the shape of a passage to be formed in the turbine blade;
embedding an electrode in the leachable ferro-electric ceramic material;
polarizing the leachable ferro-electric ceramic material;
casting metal material to form the turbine blade around the core of leachable ferro-electric ceramic material;
providing a pressure transducer for generating a transducer signal responsive to pressure applied thereto;
bridging the blade and the transducer with a pressure transducing medium;
applying an oscillating electrical potential across the core of ferro-electric ceramic material, causing it to alternately expand and contract, thereby transmitting pressure pulses through the blade passage wall and the medium to the transducer; and
converting the transducer signal to a visual signal representing the blade passage wall thickness.

4,358,883

VEHICLE TOP STRUCTURE AND METHOD OF ASSEMBLY

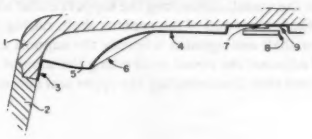
Harold E. Gerring, Bristol, Ind., assignor to Ger-Win Vans, Inc., Bristol, Ind.

Filed Dec. 14, 1979, Ser. No. 103,586

Int. Cl.³ B23P *7/00;* **B60J** *7/00*

U.S. Cl. 29—401.1 **12 Claims**

1. A method of converting a passenger compartment of a motor vehicle of the type bound by body side walls and a roof structure attached to the top of said side walls, comprising:
cutting through the side walls at a position below the roof structure and removing the roof structure and upper portion of the side walls as a unit from the vehicle passenger compartment,
forming a vehicle roof,
forming a relatively rigid self-supporting headliner separate from the vehicle roof, including means for accommodating vehicle lighting fixtures and the like,
attaching said self-supporting headliner to the top of the cut side walls of the vehicle,



attaching said vehicle roof on top of said headliner and to the top of the cut side walls of the vehicle to form a vehicle body top structure,
whereby assembly workers are allowed great freedom of movement and ease of access in assembling said headliner and said vehicle roof.

4,358,884

TIN-BASE BODY SOLDER

Douglas J. Harvey, Sterling Heights; Neal E. O'Connor, Troy, and Joseph J. Bronson, Utica, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 20, 1980, Ser. No. 199,027

Int. Cl.³ B05D *7/14*

U.S. Cl. 29—402.18 **10 Claims**

5. A method of manufacturing a tin-base alloy suitable for use in filling a depression in a fabricated steel surface, said tin-base alloy comprising about 10 to 25 weight percent copper, zero to 7.5 weight percent zinc, 0.25 to 1.5 weight percent iron and the balance tin, said method comprising
casting a homogeneous melt of the alloy, and
working said casting at a temperature less than about 150° C. to form a bar, said alloy being worked to an extent equivalent to reducing a cross-sectional area by at least 4:1.

6. A metallic body solder comprising, by weight, between about 10 to 25 percent copper, zero to 1.7 percent zinc, 0.25 to 1.5 percent iron and the balance tin, said body solder forming when suitably heated a workable thixotropic paste that is spreadable to fill a depression in a steel body surface and upon cooling form a dense paintable surface adherent to said steel body.

9. A metallic body solder incorporated onto a steel surface to fill a depression therein and formed of an alloy comprising, by weight, between about 10 to 25 percent copper, zero to 7.5 percent zinc, 0.25 to 1.5 percent iron and the balance tin, said body solder forming a dense fill that adheres to said steel body.

4,358,885

METHOD OF REMOVING AND REINSTALLING BOTTOM ENTERING AGITATOR SEALS

Jerry L. Horstman, Aberdeen, Miss., assignor to Conoco Inc., Ponca City, Okla.

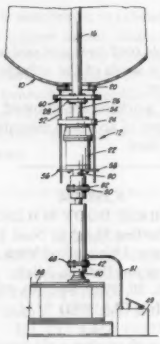
Filed Feb. 17, 1981, Ser. No. 234,734

Int. Cl.³ B23P *19/02*

U.S. Cl. 29—426.5 **4 Claims**

1. In a method of removing and reinstalling a seal unit from a process vessel bottom entering agitator assembly wherein the assembly includes an agitator positioned within the vessel, an agitator shaft connected to the agitator having a connector at the bottom end thereof adapted to be connected to a support collar which is in turn adapted to be connected to the vessel, a seal unit having upper and lower seal unit shafts, the upper seal unit shaft being connected to the connector at the bottom end of the agitator shaft within the vessel and extending through a flanged opening in the vessel, the seal unit being positioned outside the vessel and connected to the flanged opening in the

vessel and a coupling shaft connected to the bottom end of the lower seal unit shaft and to a rotary drive means, wherein the seal unit is removed by removing the coupling shaft from the assembly, disconnecting the seal unit from the flanged opening of the vessel, lowering the seal unit, agitator shaft and agitator connected thereto whereby the connection between the upper seal unit shaft and the agitator shaft is moved to a position outside the vessel, connecting the support collar to the connector at the bottom end of the agitator shaft, raising the seal unit, agitator shaft and agitator whereby the support collar is positioned adjacent the vessel, connecting the support collar to the vessel and then disconnecting the upper seal unit shaft from the



agitator shaft whereby the seal unit is removed from the assembly and wherein the seal unit is reinstalled by carrying out the above steps in reverse order, the improvement which comprises:

connecting a jack to the bottom end of said lower seal unit shaft and to the rotary drive means after removing said coupling shaft from said assembly;

using said jack to lower and raise said seal unit, agitator shaft and agitator during the removal and reinstallation of said seal unit;

disconnecting said jack from said assembly; and then reinstalling said coupling shaft in said assembly.

4,358,886

METHOD OF MOUNTING AN AZIMUTH INDICATOR IN AN AUTOMOBILE

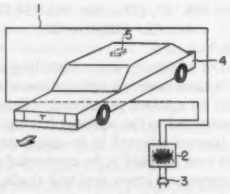
Muneaki Matsumoto, Okazaki; Koji Numata, Toyokawa, and Akira Kuno, Oobu, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Mar. 25, 1980, Ser. No. 133,922

Claims priority, application Japan, Jun. 21, 1979, 54-85430[U]; Nov. 30, 1979, 54-166252[U]

Int. Cl.³ B23P *15/00;* H01F *41/00*

U.S. Cl. 29—428 **6 Claims**



1. A method for mounting an azimuth indicator on an automobile for indicating the running direction of the automobile in response to a signal from a direction-detecting sensor which detects terrestrial magnetism, comprising the steps of:

generating an AC magnetic field which is gradually increased in intensity from zero to a predetermined level and then gradually decreased by zero by use of a coil;

rotating the automobile several times during the change of said AC magnetic field within said coil thereby demagnetizing the whole of said automobile; and

mounting said azimuth indicator at the magnetic center of said automobile.

4,358,887

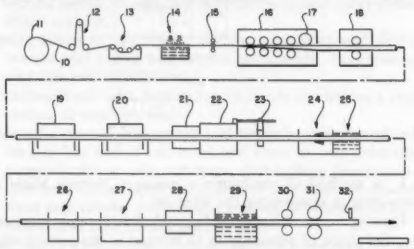
METHOD FOR GALVANIZING AND PLASTIC COATING STEEL

John A. Creps, 251 Dartmouth Ave., Canfield, Ohio 44406

Filed Apr. 4, 1980, Ser. No. 137,546

Int. Cl.³ B22D *11/126;* B21B *45/00;* B21C *23/24*

U.S. Cl. 29—527.4 **13 Claims**



1. A method of galvanizing and plastic coating pipe and tubular sections, which comprises the following steps in sequence:

(a) feeding a coil of cold rolled or hot rolled ferrous metal strip to a forming mill;

(b) looping and welding the ends of the coil to produce an endless strip;

(c) cleaning the strip to remove contaminants;

(d) forming a tube section in a forming mill and seam welding said section;

(e) sizing the section to finished dimension;

(f) cleaning the strip to remove contaminants;

(g) heating said pipe sections to galvanizing temperature;

(h) galvanizing the sections with molten zinc at about 850° F.;

(i) controlling the zinc thickness with an air knife under variable pressure;

(j) accelerated cooling the molten zinc to solidify it with air blasts at a rate of 20° F.–80° F./second so that the molten zinc is held in the range of about 750° F.–850° F. for a period of 5–30 seconds between the steps of galvanizing and water quenching and so that the zinc alloy layer after said step of quenching is 0.0018" or less in thickness to prevent the formation of spangles;

(k) water quenching the sections to solidify the zinc completely;

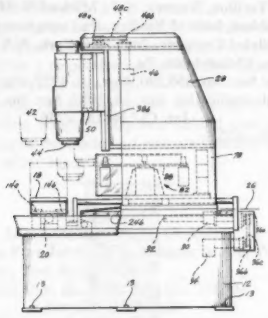
(l) plastic coating the pipe; and

(m) pulling said formed sections through the foregoing processes.

4,358,888
AUTOMATIC TOOL CHANGER WITH INTERNAL TOOL STORAGE MAGAZINE

Frank Zankl, Brookfield; Charles B. Sipek, Hales Corners, and Alvin L. Cleek, Wauwatosa, all of Wis., assignors to Kearney & Trecker Corporation, Milwaukee, Wis.

Filed Oct. 16, 1980, Ser. No. 197,641
Int. Cl.³ B73Q 3/157
U.S. Cl. 29—568 15 Claims



1. An automatic tool changing machining center effectuating rapid exchange of cutting tools comprising:

a bed;

a workpiece holding table slidably mounted on said bed for movement along a first axis;

a vertically extending upright mounted on said bed said upright having a recess therein adjacent to said workpiece holding table;

means for effecting relative movement between said workpiece holding table and said upright along a second axis perpendicular to said first axis;

a spindlehead slidably mounted on said upright so as to overlie a portion of said workpiece holding table, said spindlehead being vertically movable on said upright along a third axis orthogonal to said first and second axes;

a cutter carrying spindle journaled in said spindlehead for rotation about an axis parallel to said third axis for rotating the cutter to perform a work operation;

a tool storage magazine mounted on said bed in said recess;

a plurality of tool carriers on said magazine with each of said carriers being adapted to support a tool for use in said spindle;

a tool ready station on said magazine for receiving any one of said tool carriers to position it for a tool change operation;

means for moving the tool carrier with the selected tool into said tool ready station; and

means for effecting relative movement between the tool storage magazine and said upright to cause said tool carrier at said tool ready station to be located in alignment with and to be located distal from said spindle in performing the tool change operation.

4,358,889
PROCESS FOR MAKING A LATE PROGRAMMING ENHANCED CONTACT ROM

John E. Dickman, Russiaville, and William B. Donley, Kokomo, both of Ind., assignors to General Motors Corporation, Detroit, Mich.

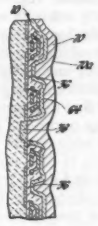
Filed May 28, 1981, Ser. No. 268,086
Int. Cl.³ H01L 21/72
U.S. Cl. 29—571 4 Claims

1. A method of making a high density read-only memory and encoding it in later steps of the method comprising:

forming on a silicon surface, an array of operative IGFETs having shallow source and drain regions and a plurality of generally parallel polycrystalline silicon gate lines and a thermally grown silicon oxide coating on the array;

opening array enhancement contact windows in said oxide using a mask that also opens ion implantation openings over selected IGFET channels without also exposing gate line edges over said channels;

significantly altering threshold voltage of said selected IGFET channels by ion implantation;



diffusing a dopant into silicon exposed by said oxide etching, to enhance IGFET contact formation;

covering said exposed silicon with an insulating coating;

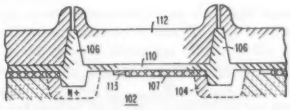
etching array contact windows in said insulating coating without also exposing gate line surfaces; and

forming a conductor pattern for drains in said array, which pattern crosses said gate lines over said channels without incurring significant parasitic interaction therewith.

4,358,890
PROCESS FOR MAKING A DUAL IMPLANTED DRAIN EXTENSION FOR BUCKET BRIGADE DEVICE TETRODE STRUCTURE

Lawrence G. Heller, Essex Junction; Harry J. Jones, Underhill; Harish N. Kotecha, Essex Junction, all of Vt., and Donald A. Soderman, Vienna, Va., assignors to IBM Corporation, Armonk, N.Y.

Division of Ser. No. 99,362, Dec. 3, 1979, abandoned, which is a continuation of Ser. No. 938,679, Aug. 31, 1978, abandoned. This application Aug. 18, 1981, Ser. No. 293,903
Int. Cl.³ H01L 21/26
U.S. Cl. 29—571 1 Claim



1. A process for making a serially connected plurality of bucket brigade devices in a silicon semiconductor substrate of P-type conductivity and a dopant concentration of from 7 to $10\times10^{15}/cm^3$, each of said devices occupying a device area bounded on opposed ends by a first and a second diffusion of N-type conductivity, the first diffusion of a first device serving as the second diffusion of a next serially connected device, with a thick insulating layer overlying said semiconductor substrate having a plurality of windows therethrough, each said window juxtaposed over and exposing a corresponding one of said device areas, comprising the steps of:

growing a thin insulating layer of silicon dioxide on the surface of said substrate in each of said device areas, to a thickness of from 500 Å to 700 Å;

depositing a first ion implantation blocking mask over a first portion of each of said device areas, masking a channel

region adjacent to said first diffusion and exposing a capacitor plate region adjacent to said second diffusion, said first mask having an edge defining the boundary between said channel region and said capacitor plate region;

ion implanting N-type conductivity dopant ions at an energy of 65 Kev and a first dose of from 1 to $5\times10^{13}/cm^2$ through said thin insulating layer and into said substrate in said capacitor plate region of each of said device areas, forming an N-type conductivity capacitor plate in said substrate which has a terminal edge at said boundary between said channel region and said plate region and which electrically contacts said second diffusion;

removing said first ion implantation blocking mask and depositing a second ion implantation blocking mask over a second portion of each of said device areas, masking a first, high threshold voltage portion of said channel region adjacent to said first diffusion and exposing a second, low threshold voltage portion of said channel region adjacent to said terminal edge of said capacitor plate;

ion implanting said N-type conductivity ions at a second dose of from 0.5 to $1\times10^{12}/cm^2$, which is lower than said first dose, through said thin insulating layer and into said substrate in said low threshold voltage portion of said channel region, forming an N-type conductivity doped low threshold voltage region having a threshold voltage of between 0 and −1 volts;

said high threshold voltage portion of said channel region having a threshold voltage of approximately +1 volts;

removing said second mask and depositing a gate electrode on said thin insulator layer over said channel region and said capacitor plate region in each of said device areas;

whereby an improved, serially connected plurality of bucket brigade devices is formed.

4,358,891

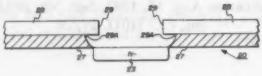
METHOD OF FORMING A METAL SEMICONDUCTOR FIELD EFFECT TRANSISTOR

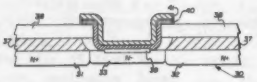
Bruce Roesner, San Diego, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Division of Ser. No. 51,058, Jun. 22, 1979. This application Aug. 31, 1981, Ser. No. 297,786

Int. Cl.³ H01L *21/225, 21/26*

U.S. Cl. 29—571 **9 Claims**





1. A method of forming a metal semiconductor field effect transistor, said method comprising the steps of:

forming a conductor which contains dopant atoms on a surface of a semiconductor substrate;

forming a first insulating layer over said conductor and said surface of said substrate;

opening a first via in said first insulating layer and said conductor to expose said substrate and said conductor;

implanting impurities of a given conductivity through said via into said substrate to form a lightly doped channel region of said transistor;

forming a second insulating layer in said first via such that it covers the exposed substrate and conductor;

diffusing said dopant atoms from said conductor into said substrate to form heavily doped source and drain regions of said transistor;

opening a second via in said second insulating layer to expose said substrate between said diffused dopant atoms without exposing said conductor; and

depositing a metal layer in said second via in electrical contact with said substrate to form a gate of said transistor.

4,358,892

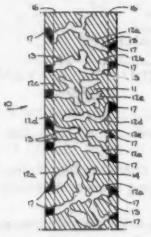
METHOD OF PRODUCING BATTERY AND ELECTROLYTIC CELL ELECTRODES

Pierre P. Turillon, Ramsey, N.J.; Michael N. Hull, and George F. Nordblom, both of Yardley, Pa., assignors to The International Nickel Company, Inc., New York, N.Y. and ESB Corporation, Philadelphia, Pa.

Division of Ser. No. 850,290, Nov. 10, 1977, Pat. No. 4,297,421. This application Apr. 18, 1981, Ser. No. 253,095

Int. Cl.³ H01M *4/56*

U.S. Cl. 29—623.5 **14 Claims**



1. A process for producing an article of manufacture adapted to be used with an electrolyte such that in use at least part of the surface of said article is exposed to said electrolyte and, at least part of the time, is at an oxidizing potential comprising

A. forming a structurally strong body of metal passivatable in said electrolyte at said oxiding potential in the configuration of said article, said body containing pores, and

B. filling said pores, at least in the vicinity of the surface of said article to be exposed to said electrolyte with an electroconductive oxide insoluble in said electrolyte in sufficient amount to block entry of said electrolyte into said pores and provide sufficient electrical resistance to inhibit oxidation of metal at the inner face of said electroconductive oxide.

4,358,893

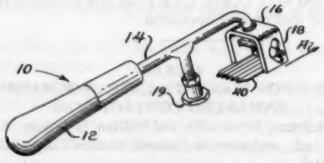
TIRE TRIMMER

Charles K. Stanfield, Matteson, Ill., assignor to B & J Manufacturing Company, Glenwood, Ill.

Filed Apr. 20, 1981, Ser. No. 255,706

Int. Cl.³ B26B *3/00*

U.S. Cl. 30—280 **6 Claims**



1. A tire trimming tool used to remove mold tips from tire carcasses, said tool having a pair of parallel spaced legs to the upper portion of which is fixed a forwardly-extending handle, the parallel spaced legs containing blade mounting slots in their facing sides adjacent the lower free ends thereof; and

a blade of sheet metal therebetween which is folded to define closely-spaced generally parallel straight ridges with intervening narrow grooves which extend lengthwise forwardly and rearwardly and have laterally sloping opposed sidewalls which define open-ended hollows on the base side of the ridges with intermediate connecting web portions therebetween;

the forward edge of said blade facing the handle containing recesses between the paired ridges and being sharpened on the underside thereof;

the outer ridges along the two sides of the blades each terminating in an upturned sidewall having an upper end which engages within a respective one of the two facing slots of the U-shaped frame legs; and

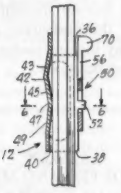
the blade having rigidifying means in the form of an upturned portion which is disposed behind said sharpened leading edge of the blade and extends laterally across the full width of the blade.

4,358,894

COMPASS PENCIL CLAMP

Georg Augustin, Port Jervis, N.Y., assignor to A & W Products Company, Inc., Port Jervis, N.Y.

Filed Dec. 19, 1980, Ser. No. 218,434
Int. Cl.³ B43L 9/24
U.S. Cl. 33—27 B **1 Claim**



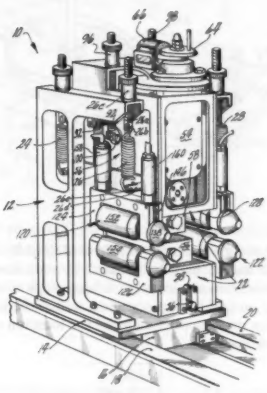
1. A writing implement holder for use with a drawing compass having first and second legs pivotally joined to one another proximate their ends, said first leg having a pointed lower end providing a pivot about which said compass can be rotated, said second leg having an arcuate extension to indicate the radius of the arc described by said compass, wherein said writing implement holder comprises a flexible cylindrical band formed as a lower extension of the second leg of said compass, said flexible cylindrical band having a top and bottom opening defining an internal channel which receives a writing implement, said flexible cylindrical band having a longitudinal side opening parallel to and coextensive with the cylindrical band, said flexible cylindrical band having a flexible rib integrally formed therewith and extending longitudinally along the axis of said band opposite said longitudinal said opening, said flexible rib having an inward extension projecting into the internal channel between the top and bottom opening of said cylindrical band and has one end joined to the top of the band and another end joined to the bottom of the band, said inward projection being intermediate the ends of said flexible rib, a pair of clamping ears formed on the opposite edges of said side opening extending outwardly from said side opening, said clamping ears being bent away from said opening and partially folded back towards the outside surface of said cylindrical band, a clamping lever having a slot with parallel side edges and semicircular end edges engaging said ears, said slot defining a camming wall through which said ears protrude, said ears being engaged by said camming wall, and said clamping lever being effective upon rotation to draw said ears and said side opening together to secure said writing instrument in said cylindrical band by engagement with the flexible rib or to allow said ears and said side opening to spread apart to release the writing implement.

4,358,895

CONTINUOUS CONTACT GAGE FOR STRIP ROLLING PROCESS HAVING FLOATING MECHANISM

Orean E. Michaud, Bristol, and George F. Kindl, Newington, both of Conn., assignors to Colt Industries Operating Corp., West Hartford, Conn.

Filed Jun. 26, 1981, Ser. No. 277,899
Int. Cl.³ G01B 5/06
U.S. Cl. 33—147 L **5 Claims**



1. In a continuous contact gage for measuring the thickness of a rolled strip of the type comprising: a main support frame, a floating frame supported on the main support frame and a gage head assembly, having upper and lower gage rollers, mounted on the floating frame, and two guide roll assemblies mounted on the sides of the floating frame, the improvement comprising:

a plurality of support springs interconnecting the floating frame and the main support frame such that the floating frame is spaced from the main support frame whereby the floating frame can translate in any direction and pivot about any horizontal axis:

the gage head assembly being mounted for axial sliding movement upon the floating frame to enable the gage head assembly to move vertically with respect to the floating frame;

at least one spring interconnecting the gage head assembly and the floating frame such that the gage head assembly is biased in an upward direction whereby the lower gage roller may firmly engage the undersurface of the rolled strip; and

a rotation preventing structure mounted on the main support frame and adapted to prevent rotation of the floating frame about a vertical axis while permitting translation thereof in any direction and pivoting thereof about any horizontal axis.

4,358,896

WORKPIECE LOCATOR

William L. Thomas, 1122 Sumner, Lincoln, Nebr. 68502

Filed Nov. 6, 1980, Ser. No. 204,607
Int. Cl.³ G01B 5/14
U.S. Cl. 33—181 R **25 Claims**

12. Apparatus for positioning a workpiece with respect to a tool held by a tool holder, which tool holder is adapted to move the tool along a path toward and away from the workpiece, comprising:

a workpiece positioning body means;

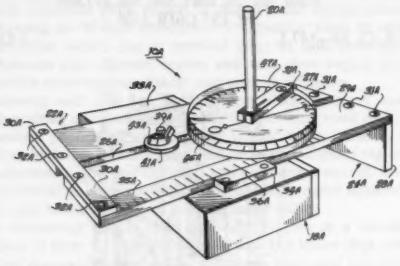
means for attaching said workpiece positioning body means to said tool holder;

movable means movably attached to said workpiece posi-

tioning body means for indicating the position of side of said workpiece;

means for extending said movable means a selected distance up to a predetermined maximum distance; and

center line means on said workpiece positioning body means



for indicating the center of said tool holder, whereby said movable means may be located in accordance with the dimension from the location where work is to be done by said tool on said workpiece and a side of the workpiece for indicating on a support member the location of one side of the workpiece.

4,358,897

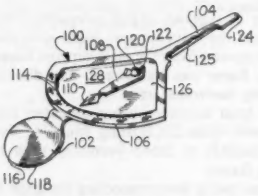
GRAVITY GAUGE FOR DETERMINATION OF SHOULDER BONE ANGLES IN HORSES

William W. Hornbeck, 4785 Troth St., Mira Loma, Calif. 91752

Filed Mar. 2, 1981, Ser. No. 239,699

Int. Cl.³ G01B *3/56*; G01C *9/12*

U.S. Cl. 33—343 **12 Claims**



1. A gauge for determining the shoulder bone angle of a horse with respect to gravity including:

a body having integral therewith, a protractor scale about an apex, a bone pointer on a first end thereof, and at least one joint cup on an opposite end thereof;

a pivot at said apex; and

a pointer pivoted for rotation about said pivot, said pointer having a pointer end and a back end, said pointer end being configured so that said pointer end has a larger moment about said pivot than said back end and having a pointer tip that is positioned adjacent said protractor scale for indicating the relative angle between said body and said pointer.

4,358,898

PROTRACTOR

Edward C. Johnson, 84 Grove St., Shrewsbury, Mass. 01545

Filed Nov. 17, 1980, Ser. No. 207,287

Int. Cl.³ B43L *7/06, 13/08*

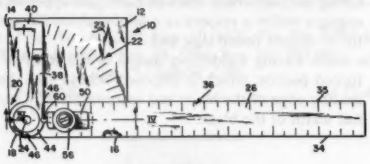
U.S. Cl. 33—424 **10 Claims**

1. Protractor comprising:

(a) a flat base having a corner portion, a first straight edge extending from the corner portion, a second straight edge extending from the corner portion at a right angle to the first straight edge and a degree scale extending between said first and second edges along a circular arc generated from a point on the corner portion,

(b) a measuring arm mounted on the base for rotation about said point and having straight edges for cooperating with either of said first and second straight edges to form an angle corresponding to an angle to be measured,

(c) an indicator arm mounted on the measuring arm for rotation about said point and having an indicator mark



spaced from said point so that the mark coincides with said degree scale, and

(d) locking means for fixing the indicator arm in a plurality of predetermined positions on the measuring arm so that in each position, the angle indicated by the mark on the scale coincides with the angle formed between at least one of the said first and second straight edges and one of the straight edges of the measuring arm, and the range of angles measured by the protractor is different for each of said predetermined positions.

4,358,899

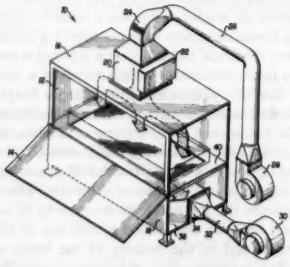
FLOW-THROUGH DRYER AND METHOD FOR RAPID DRYING OF POROUS FOAMS

Robert M. Murch, Brinkwood, Md., and John J. Eagan, Acton, Mass., assignors to W. R. Grace & Co., New York, N.Y.

Filed Mar. 30, 1981, Ser. No. 249,182

Int. Cl.³ F26B *3/06*

U.S. Cl. 34—15 **12 Claims**



11. A batch process method of rapidly drying foraminous structures by forcing heated air through the structure in a drying chamber comprising

inserting said structure to be dried onto a flat porous support member in the drying chamber positioned between a heated gas inlet and a gas outlet, said support member having a gas impervious mask around the perimeter outside of the area of said structure;

circulating heated air rapidly through said chamber so that essentially all of the heated air passes through said structure and then exhausting said heated air to the atmosphere until said structure is dried; and

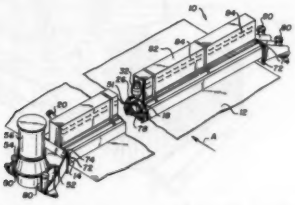
removing the dried structure from the drying chamber.

4,358,900

APPARATUS TO SUPPLY STEAM INCLUDING STEAM EVACUATION

Norman F. Dove, 3187 Hoskins Rd., North Vancouver, British Columbia, Canada (VTJ 3B5)

Filed Sep. 24, 1980, Ser. No. 190,472
Int. Cl.³ F26B *13/00, 21/06*
U.S. Cl. 34—54 11 Claims



1. Apparatus to supply steam to a paper sheet moving beneath it, the apparatus having a leading edge and a trailing edge relative to sheet direction and comprising:

a header;

means to supply steam to the header;

a chamber adjacent to the header;

means dividing the chamber into a plurality of compartments in the cross machine direction;

a pipe connecting each compartment to the header to supply steam from the header to each of the plurality of compartments, an inlet for each pipe in the header, an outlet for each pipe in each compartment, a valve control associated with each pipe and a piston extending from the valve control to the pipe inlet whereby control of the steam supply from the header to the individual compartments of the steam chamber can be achieved;

a heating zone defined beneath the chamber to be generally adjacent to the paper sheet when the apparatus is in use;

outlets in the chamber to permit steam to pass from the chamber to the heating zone;

exhaust manifolds positioned adjacent to and substantially coextensive with the leading edge and the trailing edge of the apparatus whereby excess steam vapour may be drawn away from the heating zone.

4,358,901

MULTIPURPOSE BASIC APPARATUS FOR TREATING POWDERS

Hikaru Takabatake, Yokohama, and Yoshiro Shudo, Tokyo, both of Japan, assignors to Yamato Kagaku Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 3, 1980, Ser. No. 183,830
Claims priority, application Japan, Mar. 21, 1980, 55/35857
Int. Cl.³ F26B *17/10*
U.S. Cl. 34—57 R 4 Claims

1. A multipurpose basic apparatus for treating powders which is applicable to various powder treatments including spray drying, fluidized bed drying and granulation and fluidized bed continuous drying, which apparatus comprises:

a lower frame provided with a lower piping having two openings facing upward;

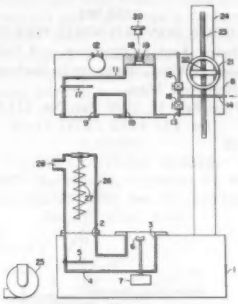
an upper frame provided with an upper piping with two openings facing downward and respectively positioned in coaxially aligned relation to the two openings of the lower piping;

a feed pump for a liquid provided on said upper frame;

a feed pipe for pressurized air provided in one of said two openings in said upper frame;

a lift mechanism for moving the upper frame up and down to provide a variable and settable spacing between said upper and lower frames;

at least one material treatment chamber being connected between and in fluid communication with one opening of the lower piping and the corresponding coaxially aligned opening of the upper piping;



at least one air modifying chamber being connected between and in fluid communication with at least one of the other openings of the upper and lower pipings; and

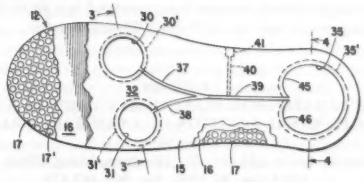
an air circulating means for creating an air flow in said air modifying chamber.

4,358,902

THRUST PRODUCING SHOE SOLE AND HEEL

George S. Cole, P.O. Box 233, 17 Mile Dr., at Midway Pt., Pebble Beach, Calif. 93953, and Karl M. Schmidt, 105 South Dr., Mountain View, Calif. 94040

Filed Apr. 2, 1980, Ser. No. 136,747
The portion of the term of this patent subsequent to Dec. 9, 1997, has been disclaimed.
Int. Cl.³ A43B *13/18, 13/20, 21/28*
U.S. Cl. 36—28 10 Claims



1. A thrust producing shoe sole and heel, comprising:

a sole and heel member including sole and heel portions, said sole portion having a plurality of cavities underlying only the metatarsal ball area of a foot for which said member is sized and said heel portion having at least one cavity therein;

said member having restricted passageways connecting said cavities;

cavity closing material overlying said cavities and secured to said member in fluid-proof manner, the walls of said cavities at the bottom of said member being resilient and wear-resistant; and

fluid in said cavities and said passageways under such pressure as to create bulges below the bottom of said member;

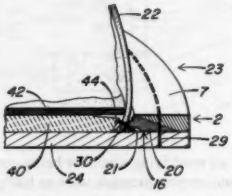
whereby at rest a foot on said member is cushioned comfortably on the pressurized fluid in the bulges, and in walking or running fluid under bulge producing pressure alternates through said passageways between the at least one cavity of said heel portion and the plurality of cavities of said metatarsal ball area, to absorb shock and produce an alternate lifting effect by the bulges which provides for-

ward thrust both in the heel portion and in the metatarsal ball area that facilitates walking or running.

4,358,903
WEDGE BONDED SHOE WELTING

Richard K. Hynes, East Bridgewater, and Robert W. Hynes, Brockton, both of Mass., assignors to Barbour Welting Company, Inc., Brockton, Mass.

Filed Feb. 15, 1980, Ser. No. 121,650
Int. Cl.³ A43B *15/00, 13/18*
U.S. Cl. 36—78 **7 Claims**



1. A wedge bonded shoe welting adapted to be secured in a shoe comprising:

a member of non-fibrous composition comprising a base, a groove within the base extending along its length, and a broad beveled surface; and

a member of fiberboard material comprising an outer surface and an end surface, each having a grain appearance which is exposed to exterior view in an assembled shoe, and a broad beveled surface which is coextensive with and bonded to the broad beveled surface of the non-fibrous member, said fiberboard member having a generally trapezoidal cross-section, said fiberboard member being bonded to said non-fibrous member at the beveled surfaces thereof such that said non-fibrous member is hidden by said fiberboard member when secured in a shoe, thereby to prevent viewing of the non-fibrous member.

4,358,904
APPARATUS FOR SELECTIVELY VARYING THE LONGITUDINAL POSITION OF A SKIER ON A PAIR OF SKIS

William H. Guild, 133 Otis St., Hingham, Mass. 02043

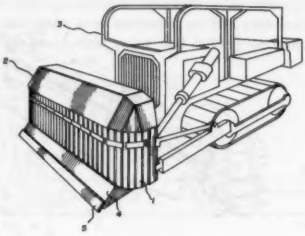
Filed Jun. 26, 1980, Ser. No. 163,178
Int. Cl.³ A43B *5/04*
U.S. Cl. 36—117 **9 Claims**

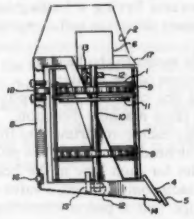
1. A boot having a front end portion and a back end portion formed on a longitudinal axis, the boot particularly adapted for mounting to snow skis comprising an upper portion of the boot configured to receive a foot and a two part sole member, the first part movable relative to the second part, the first part formed integrally with the upper portion of the boot and depending therefrom, the second part being attachable to the ski and means to restrict movement of the first part relative to the second part along the longitudinal axis.

4,358,905
POWER DOZER

Donald Maxwell, P.O. Box 816, Viking, Alberta, Canada (T0B 4N0)

Filed Nov. 23, 1979, Ser. No. 97,045
Int. Cl.³ E02F *5/02, 5/22*
U.S. Cl. 37—100 **7 Claims**





1. Apparatus for moving earth comprising:

(a) a vehicle;

(b) earth contacting means mounted on said vehicle (a) for moving earth in one direction;

(c) a reversible horizontally traveling endless track earth moving means mounted on said vehicle above said earth contacting means for moving earth lateral to said one direction;

(d) at least two independent reversible direct drive means driving said endless track (c); and

(e) means for supporting the weight of the endless track (c) independently of the drive means (d).

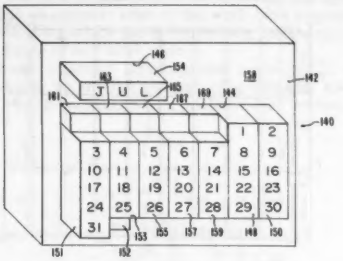
4,358,906
CALENDAR

Gary W. Reininga, 18960 Fernbrook Ct., Saratoga, Calif. 95070

Filed Apr. 9, 1980, Ser. No. 138,763
Int. Cl.³ G09D *3/02*
U.S. Cl. 40—107 **7 Claims**

1. A calendar comprising: a support including a number of abutting panels; a plurality of first strips, each first strip having first indicia thereon for indicating a particular group of days of a month; a set of second strips having second indicia thereon for indicating the months of the year, one of the panels having a first recess and a second recess, the first recess being adapted for removably receiving the first strips on the support in first locations in which the first strips are arranged to represent the days of a particular month with reference to the days of a week, the second recess being adapted for removably mounting a second strip on the support at a second location spaced from the first locations, each of said first and second strips

having edge margins frictionally engageable with the support at the boundary of the respective recess for mounting the strip



on the support, there being a number of spacer members for filling the first recess when the first strips are received therein.

4,358,907

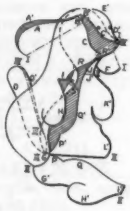
COMPACT MANUFACTURING SYSTEM FOR FORMING SOFT GOODS MAINLY TOYS

Claude R. M. Moreau, 85-06 60th Ave., Elmhurst, N.Y. 11373

Continuation of Ser. No. 129,723, Mar. 12, 1980, which is a continuation of Ser. No. 832,602, Sep. 12, 1977, abandoned. This application Jan. 8, 1981, Ser. No. 223,423

Int. Cl.³ A63H *3/02*

U.S. Cl. 46—158 **6 Claims**



1. A one-piece substantially rectangular fabric blank for forming the exterior of a soft toy of the three-dimensional type in its entirety, said blank including at least two single cuts, each said cut producing edges of a plurality of forming portions interrelated in a substantially jig-saw puzzle relationship, comprising: a rear body-forming portion, a rear head-forming portion upwardly extending from and integral with said rear body-forming portion, said rear body and head forming portions each being bisected by a single, imaginary median line dividing each of said portions into respective right and left sub-portions, a left front head-forming portion extending transversely from and integral with said left rear head-forming sub-portion, a right front head-forming portion extending transversely from and integral with said right rear head-forming sub-portion, a left rear arm-forming portion extending transversely from and integral with said left rear body-forming sub-portion, a left front arm-forming portion extending downwardly from and integral with said left rear arm-forming portion, a right rear arm-forming portion extending transversely from and integral with said right rear body-forming sub-portion, a right front arm-forming portion extending downwardly from and integral with said right rear arm-forming portion, a left front body-forming portion integral with and extending from said left rear body-forming sub-portion, a left leg-forming portion integral with and extending from said left front body-forming portion, a right front body-forming portion extending from and integral with said right rear body-forming sub-portion and a right leg-forming portion integral with and extending from said right front body-forming portion, said blank being adapted to be folded so that the outer edges of said left and right front head portions mutually mate, so that the lower edges of said left and right front head-forming portions and the outer edges of said left and right front body-forming portions respectively mutually mate, the lower edges of said left and right front body-forming portions mutually mate and each leg-forming portion having edges adapted to mate, all of said mating edges being joinable in a seam.

4,358,908

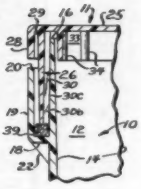
PLANT CULTURE VESSEL

John S. Song, 2827 Sheridan Pl., Evanston, Ill. 60201

Filed Dec. 23, 1980, Ser. No. 219,846

Int. Cl.³ A01G *9/02*

U.S. Cl. 47—66 **9 Claims**



1. A container for use in culturing plants and comprising a base member and a cap member which are mated to form an enclosure;

said base member having upstanding wall means defining a base top;

said cap member having a top and an outer wall extending downwardly therefrom outside of said wall means, with at least the lower portion of said outer wall being spaced a selected distance from said wall means;

said cap member further having an annular flange projecting downwardly from said top inside of and in juxtaposition to the wall means to block the flow of condensation on the inside of said cap top outwardly past said wall means; and

a plurality of downwardly extending and transversely spaced flexible ribs integral with said outer wall and positioned within the space defined between said outer wall and said wall means and extending into functional engagement with said wall means, said ribs projecting from said outer wall in a manner such that the included angle therebetween is substantially less than ninety degrees;

whereby said outer wall and ribs are adapted to securely retain said cap mated with said base member with the tops of said cap and base member in sealing engagement and so that said ribs will flex to accommodate base members having varying sizes.

4,358,909

TURNSTILE

Emmanuel M. Trikilis, 1545 W. 130th St., Brunswick, Ohio 44212

Filed Jul. 24, 1980, Ser. No. 172,087

Int. Cl.³ E06B *11/08*

U.S. Cl. 49—42 **42 Claims**

1. A turnstile construction adapted to facilitate selective passage between two separated areas, said turnstile comprising:

a plurality of elongated upstanding mounting columns spaced apart from each other to define a frame-like structure at some predetermined location between said areas;

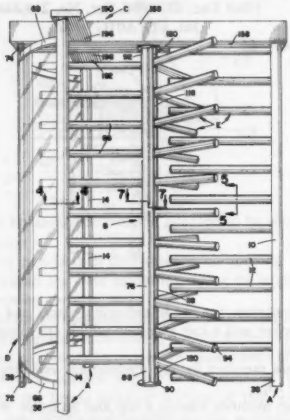
closure means extending between at least a pair of said mounting columns;

an elongated upstanding pivot column spaced from said pair of mounting columns and journaled for selective rotation

about its longitudinal axis, said pivot column having a plurality of longitudinal grooves disposed at spaced intervals therearound;

a plurality of pivot column arms associated with each pivot column groove arranged to extend radially outward of said pivot column, those column arms associated with each groove being spaced apart from each other in a generally aligned relationship with each other over at least a portion of the groove length;

locking means received in each groove in a cooperative locking relationship with one end of the associated column arms; and,



a pivot control mechanism operatively associated with said pivot column for selectively controlling rotation thereof, said mechanism including a cam having a continuous cam surface with a plurality of detents disposed at spaced intervals therealong for defining a plurality of pivot column home positions, a plurality of cam followers normally urged into engagement with said cam surface for generally biasing said pivot column to one of said home positions and means for determining the general direction of allowable pivot column rotation.

4,358,910

SECURITY GATE

Terence J. Keating, 74 Westgarth Rd., Exeter, Devon, and Gordon T. Bond, 8 King's Lear, Ilton, Ilminster, Somerset, both of England

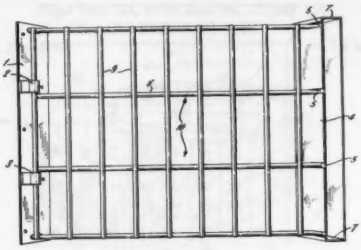
Filed Jul. 7, 1980, Ser. No. 166,574

Claims priority, application United Kingdom, Jun. 27, 1979, 7922292

Int. Cl.³ E06B *3/68*

U.S. Cl. 49—56 **6 Claims**

1. A security gate comprising a grille constituted by bars; at least two frame members which fit along opposite sides of an aperture, large enough for personal egress, in a wall, said frame members including a first frame member incorporating a hinge means mounting said grille, and a second frame member comprising a channel member which has slots for the reception of the ends of bars along another side of the grille; and a locking



bar which locks into position within the channel member for securing the ends of the said bars within the slots.

4,358,911

MACHINE FOR RELIEF GRINDING TAP THREADS

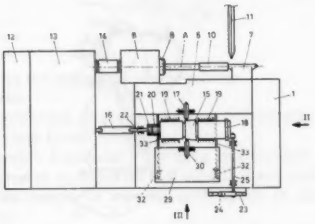
Emil Vogelsanger, Lohningen, Switzerland, assignor to Reishauer AG, Zurich, Switzerland

Filed Dec. 17, 1980, Ser. No. 217,300

Claims priority, application Fed. Rep. of Germany, Dec. 28, 1979, 2952610

Int. Cl.³ B24B *17/02*

U.S. Cl. 51—94 CS **15 Claims**



1. A relief grinding machine for cutting screw tap threads in a workpiece (10) mounted on a body (5) of a longitudinally movable sled, wherein means are provided on the sled for producing a stroking motion which transversely oscillates the body while the workpiece rotates and is moved by the sled past a transversely adjustable grinding disc (11), characterized by: the body (5) mounting a follower (17) which rides on the lobe curvatures of a cam roller (15) mounted on the sled (1), the roller axis being parallel to the direction of movement of the sled, the roller having a surface configured so that different cuts normal to the workpiece axis have varying profile depths, and the cam roller being axially adjustable and secureable to adjust the oscillating stroke of the body (5).

4,358,912

GRINDSTONE CLEARANCE CORRECTING DEVICE FOR SPRING GRINDING MACHINE

Watanabe Shigeru, 121, Oaza Shibiragi, Urawa-City, Saitama-Pre, Japan

Filed May 27, 1980, Ser. No. 153,675

Int. Cl.³ B24B *49/04*

U.S. Cl. 51—118 **2 Claims**

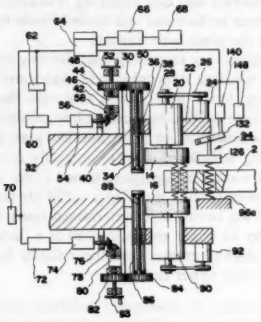
1. A spring grinding machine having a grindstone clearance correcting means, comprising:

a work table rotatably mounted for rotation in a predetermined direction and having a plurality of spring holding

holes at equal intervals along the faces of the table concentric to the axis of rotation thereof for holding the coil springs to be ground;

at least one pair of grindstones for grinding coil springs disposed on opposite sides of the work table opposed to the path along which the spring holding holes move during rotation of said work table;

a grindstone clearance adjusting unit connected to said grindstones for driving the pair of grindstones toward each other in increments of a predetermined amount;



a spring length detecting unit disposed after the grindstones in the direction of rotation of the work table for detecting extra long springs in the spring holding holes which are longer than a predetermined length and outputting a signal each time an extra long spring is detected; and

means connected between said spring length detecting means and said grindstone clearance adjusting unit for supplying an actuating signal to said grindstone clearance adjusting unit only after a predetermined number of signals have been received from said spring length detecting unit in a predetermined time.

4,358,913

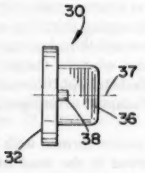
LENS BLOCK

Frank D. Sorrells, Knoxville, Tenn., assignor to Cole National Corporation, Beachwood, Ohio

Division of Ser. No. 44,991, Jun. 4, 1979, Pat. No. 4,267,672. This application Nov. 18, 1980, Ser. No. 207,923

Int. Cl.³ B24B *13/00*

U.S. Cl. 51—216 LP **11 Claims**



1. A lens block comprising: a generally circular body portion having a generally circular mounting face for attachment to a lens blank surface, mounting means extending outwardly from said body portion on the opposite side thereof from said mounting face for mounting said lens block in a chuck, and said mounting means including a substantially flat tab extending through the longitudinal center of said body portion with said tab defining alignment means for alignment with a base line on a lens blank, with said mounting means further including a protrusion extending perpendicularly away from said tab at the longitudinal center of said body portion, whereby said alignment means provides a reference when received in a chuck for orientation of the lens base line to a desired position for grinding or polishing of the lens blank.

4,358,914

BUS FRAME FOR A MOTOR BUS

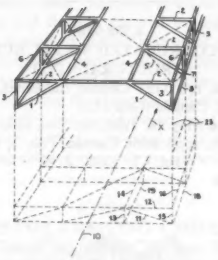
Ludwig Geyer, Puchheim, Fed. Rep. of Germany, assignor to M.A.N. Maschinenfabrik Augsburg-Nurnberg A.G., Munich, Fed. Rep. of Germany

Filed Sep. 11, 1980, Ser. No. 186,066

Claims priority, application Fed. Rep. of Germany, Sep. 11, 1979, 2936708

Int. Cl.³ E04B *1/32*

U.S. Cl. 52—643 **3 Claims**



1. A bus frame for a motor bus comprising a floor frame and a roof frame spaced above the floor frame, the roof frame including a three-dimensional longitudinally continuous framework occupying at least a portion of the total roof frame width, the three-dimensional framework fitting along the corners of the bus formed where the roof and side walls of the bus meet, and the outer contour of the three-dimensional framework having the form of a triangular prism, one face of the prism coinciding with the bus roof and another face of the prism coinciding with a bus side wall.

4,358,915

SELF-ASSEMBLING TELESCOPABLE STRUCTURE

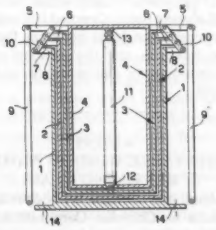
Antonio Pantalone, Milan, Italy, assignor to L.P.E. S.r.l., Milan, Italy

Filed Oct. 1, 1980, Ser. No. 193,130

Claims priority, application Italy, Oct. 2, 1979, 26197 A/79

Int. Cl.³ E04H *12/18;* B66C *23/34*

U.S. Cl. 52—115 **13 Claims**



1. A self-assembling telescopable structure comprising a plurality of component parts each having a height substantially equal for all of them, and which can be slipped and unslipped into and from an external component part, intermediate component parts and innermost component part, characterized in that there are provided first releasable fastening means between the top ends of the component parts when they are slipped into one another, second releasable fastening means

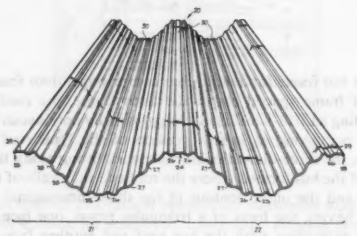
between the top end of the innermost component part and the top end of any of the intermediate and the outermost component part when the innermost component part is slipped from its next intermediate component part, third releasable fastening means between the top end of each component part, the innermost one excepted, and the bottom end of the next intermediate or innermost component part, and reversible lifting means acting between the top end of the innermost component part and the bottom end of the next intermediate component part adapted controllably to cause the unslipping of the innermost component part from the next intermediate component part and the slipping of the innermost component part into its next intermediate component part, said third fastening means comprising angle members and means for releasably affixing same to the associated components.

4,358,916

NOVEL CORRUGATED METAL BUILDING STRUCTURAL UNIT

Maurice Lacasse, c/o 1191 Chemin Industriel, Bernieres, Cte Levis, Quebec, Canada (G0S 1C0)

Filed May 28, 1980, Ser. No. 154,017
Claims priority, application Canada, Feb. 7, 1980, 345222
Int. Cl.³ E04C *2/32*
U.S. Cl. 52—630 **19 Claims**



1. A corrugated metal building panel having at least one longitudinally extending major wave disposed about a neutral axis, each such major wave being provided with a plurality of spaced-apart, discontinuous web zones, each web zone comprising a plurality of interlinked longitudinally extending wave-like stiffeners superposed on each major wave and following the general corrugated pattern of the major wave thereof, and a plurality of spaced-apart flange zones, said flange zones comprising spaced-apart, flattened areas deformed from the general corrugated pattern of the major wave of said panel and spaced-apart flange stiffeners, said flange stiffeners projecting from the exterior of the curvature of said major wave and always being directed towards the neutral axis of the panel, whereby the local buckling factor is optimized, and the section modulus and the moment of inertia are increased, and consequently the strength and rigidity of the panel is increased.

4,358,917

SELF-ADJUSTABLE WINDOW MOLDING FOR RETAINING GLASS

Roy Oda, Westland, and Richard W. Nicholas, Livonia, both of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

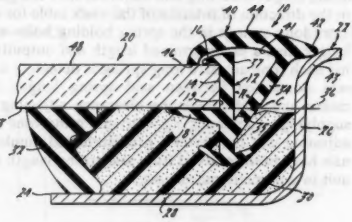
Filed May 11, 1981, Ser. No. 262,083
Int. Cl.³ E04C *2/38, 5/07;* E04B *1/62;* E04C *1/34*
U.S. Cl. 52—717 **1 Claim**

1. A flexible one-piece molding preattached to a glass plate edge for closing a vehicle body window receiving opening defined by an L-section rebate forming a reveal flange and a fence flange, the glass plate and molding upon location in the opening being retained by a bead of curable adhesive, the plate when located in the opening having a variable gap between the reveal flange and the edge of the glass plate, said molding comprising:

an elongated stem having first and second inwardly directed mutual converging resilient upper and lower legs respectively, extending from one side of said stem continuously along its length, said first leg having a predetermined lateral dimension of the order of two to three times less than said lower leg, said legs being self-biased such that they are adapted to receive the edge of the plate for retaining the molding in substantially fixed relation with the plate wherein said first upper leg is adapted to engage the plate outer surface and said second lower leg is adapted to engage the plate inner surface;

a third support leg extending continuously along the length of said molding stem other side, said third leg located on said stem lower end portion subjacent the medial transverse plane defined by a center-line substantially coplanar with the inner surface of the installed glass plate, said third leg being self-biased so as to normally diverge upwardly and outwardly at a predetermined acute angle from the stem lower portion defining a valley therewith;

said third leg having a predetermined transverse dimension whereby its upper end is located at a distance from said valley slightly greater than the distance from said valley to said stem upper end;



a coextensive arcuate-sectioned trim strip integral with said third leg upper end at a juncture adjacent the trim strip outer longitudinal edge, said trim strip including a lip portion normally extending from said third leg upper end outwardly in the direction of curvature of said arcuate-sectional trim strip, wherein said trim strip extends inwardly from said diverging third leg such that in its normal unflexed position said third leg supports said trim strip in a cantilever manner whereby the projected area of said trim strip overlies said stem portion and the gap, and said trim strip free edge adapted to engage the outer surface of the glass plate;

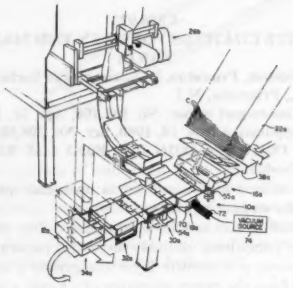
said stem lower end portion formed with lateral protrusions adapted to be received in the bead of curable adhesive upon the glass plate being inserted in the window opening; and

said molding of a size whereby with the existence of a predetermined maximum gap said trim strip being of a size to engage the body panel to conceal the gap, and wherein with a reduced tolerance gap said third leg together with its lip portion are adapted to engage the reveal flange causing said trim strip free edge to be moved inwardly in a self-adjusting manner while flexing said trim strip free edge into continued engagement with the glass plate outer surface, whereby said molding trim strip presents a uniform flush-like gap free appearance throughout a production tolerance gap range.

4,358,918
CARTONING APPARATUS

James S. Groom, Wales, Mass., and Robert W. McIntyre, Kennewick, Wash., assignors to Package Machinery Company, East Longmeadow, Mass.

Filed Feb. 22, 1980, Ser. No. 123,824
Int. Cl.³ B65B 43/24, 5/00
U.S. Cl. 53—74 13 Claims

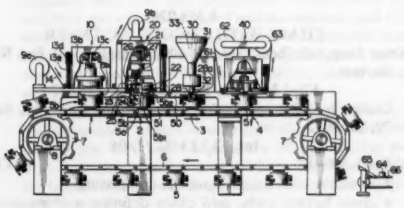


1. A cartoning machine comprising a carton conveyor, carton confining receptacles carried by said carton conveyor, drive means for advancing said carton conveyor to move each successive carton confining receptacle to and through a plurality of stations including a carton receiving station and a carton filling station, carton transfer means for depositing an erected carton sleeve in each successive carton confining receptacle at said carton receiving station, bag guiding means disposed laterally of said carton conveyor at said filling station for directing a filled bag into the near open end of an associated carton sleeve at said carton filling station, bag transfer means for moving a bag through said bag guiding means and feeding it into said carton through said open end, means for delivering a bag to said bag transfer means, and vacuum means for assisting movement of a bag through said guiding means and from said bag guiding means into the associated carton sleeve and including a vacuum head mounted adjacent said carton conveyor at said carton filling station and at the laterally opposite side of said carton conveyor from said bag guiding means for engaging the carton sleeve at its far open end to draw a vacuum on the interior of said carton sleeve.

4,358,919
METHOD AND APPARATUS OF MAKING A HERMETICALLY SEALED CONTAINER

Kazumi Hirota, Tokyo; Kikuo Matsuoka, and Ichiro Hori, both of Yokohama, all of Japan, assignors to Toyo Seikan Kaisha, Limited, Tokyo, Japan

Filed Jun. 19, 1980, Ser. No. 161,089
Claims priority, application Japan, Jun. 29, 1979, 54-81294
Int. Cl.³ B65B 47/02, 47/04
U.S. Cl. 53—453 10 Claims

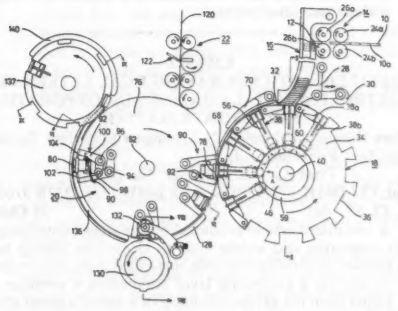


1. In a process for making a hermetically sealed container which comprises placing a blank on a movable retainer which is at a standstill at a blank placing station; moving said retainer together with said blank in a horizontal direction to a forming station and forming a cup-shaped container body having a flange portion from said blank by using said retainer and a cooperating punch; moving said retainer together with said container body which is engaged with said retainer at said flange portion, in a horizontal direction to a filling station, and filling a product in said container body; and moving said retainer together with said container body filled with said product, in a horizontal direction to a sealing station, and heat sealing said flange portion with a lid member, the improvement which comprises using as said retainer a die which is movable in a horizontal direction and is provided with a cavity having a sidewall of a configuration corresponding to a sidewall portion of said container body; punching said blank from a web of a relatively thin and flexible material at said blank placing station, pushing down and placing said blank on said die, and clamping the peripheral portion of said blank on said die; moving said die on which said blank is clamped to said forming station and then releasing the clamping; and drawing said blank at said forming station using said die and said punch, so as to form said container body the sidewall portion of which is in closely contacting relationship with the sidewall of said cavity.

4,358,920
APPARATUS FOR WRAPPING A SHEET ARTICLE

Kiyoshi Kanai, Tokyo, and Masashi Mamura, Kawagoe, both of Japan, assignors to Lotte Co., Ltd., Tokyo, Japan

Filed Jun. 4, 1980, Ser. No. 156,393
Int. Cl.³ B65B 11/28, 63/00
U.S. Cl. 53—516 10 Claims



1. Apparatus for continuously wrapping a sheet article, comprising means for cutting an elongated sheet article into a predetermined size for continuous supply, a feeding drum rotatably mounted about an axis for transferring each cut piece of the sheet while holding the cut piece on the circumference of the feed drum, a wrapping drum directly confronting said feed drum and provided about its circumference with means for receiving the cut sheet article, paper feed mechanism for continuously supplying wrapping paper to the wrapping drum, means for rotating said feeding and wrapping drums, and means for transferring the cut sheet article from the feeding drum to the wrapping drum, said transferring means comprising a plunger radially carried by the feeding drum which at its radially inner end has a cam follower which is in contact with a cam for operating the plunger to transfer said cut sheet article from said transfer drum into said wrapping drum receiving means, a pushing member radially carried by the radially outer end of the plunger and the radially inner end of which pushing member has another cam follower which is in contact with another cam for operating the pushing member to urge the pushing member outwardly of the feeding drum relative to the plunger to support and hold the cut sheet article within said

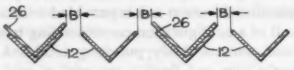
wrapping drum receiving means after withdrawal of said plunger.

4,358,921

COTTON STRIPPER FINGER ATTACHMENT

Dan Pustejovsky, Hillsboro, Tex., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Aug. 31, 1981, Ser. No. 297,771
Int. Cl.³ A01D *45/18*
U.S. Cl. 56—34 **6 Claims**



1. In a cotton stripper having a header, the combination comprising:

a plurality of transversely spaced elongated boll stripping fingers secured to said header and lying side by side at predetermined spacing and extending forwardly in a downwardly inclined plane, each of said fingers including an elongated main body of V-shaped cross-section with a downwardly directed apex, said main bodies being spaced from one another to provide boll stripping gaps therebetween, and

elongated attachments of V-shaped cross-section nested on top of said main bodies of selected fingers, said attachments being of greater width than the main bodies of said selected fingers whereby the gap between the finger to which an attachment is mounted and an adjacent finger is less than the gap between said main bodies of said fingers without said attachment.

4,358,922

METALLIC ARTICLES HAVING DUAL LAYERS OF ELECTROLESS METAL COATINGS INCORPORATING PARTICULATE MATTER

Nathan Feldstein, Princeton, N.J., assignor to Surface Technology, Inc., Princeton, N.J.

Filed Apr. 10, 1980, Ser. No. 139,108
Int. Cl.³ D01H *1/24;* D02G *3/00;* B05D *1/18;* B37B *3/00*
U.S. Cl. 57—401 **39 Claims**

1. A metallized article produced by the steps comprising:

(1) contacting said article with an electroless plating bath further comprising insoluble suspended particulate matter to provide a composite layer comprising a member selected from the group consisting of a metal, a metal alloy, and mixtures thereof, and the insoluble particulate matter,

(2) contacting said treated article with an electroless plating bath to provide a layer comprising a member selected from the group consisting of a metal, a metal alloy, and mixtures thereof, said layer being substantially free of particulate matter substantially covering the particulate matter exposed from step 1, and subsequently

(3) removing a portion of the electrolessly deposited layer deposited in step 2 thereby providing a smoother surface finish in comparison to the surface finish after step 1, however retaining a sufficient amount of electroless metal from step 2 to substantially cover the particulate matter exposed from step 1.

18. A process for the metallization of a substrate comprising the steps:

(1) contacting said substrate with an electroless plating bath further comprising insoluble suspended particulate matter to provide a composite layer comprising a member selected from the group consisting of a metal, a metal alloy, and mixtures thereof, and the insoluble particulate matter,

(2) contacting the treated substrate with an electroless plating bath to provide a layer comprising a member selected from the group consisting of a metal, a metal alloy, and mixtures thereof, said layer being substantially free of particulate matter substantially covering the particulate matter exposed from step 1, and subsequently

(3) removing a portion of the electrolessly deposited layer deposited in step 2 thereby providing a smoother surface finish in comparison to the surface finish after step 1, however retaining a sufficient amount of electroless metal from step 2 to substantially cover the particulate matter exposed from step 1.

4,358,923

COMPOSITE COATINGS FOR OPEN-END MACHINERY PARTS

Nathan Feldstein, Princeton, N.J., assignor to Surface Technology, Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 139,108, Apr. 10, 1980. This application Nov. 14, 1980, Ser. No. 206,881
Int. Cl.³ D01H *1/24;* D02G *3/00;* B05D *1/18;* B32B *3/00*
U.S. Cl. 57—401 **25 Claims**

1. A metallized article utilized in open-end spinning produced by the steps comprising:

(1) contacting said article with an electroless plating bath further comprising insoluble suspended particulate matter to provide a composite layer comprising a member selected from the group consisting of a metal, a metal alloy, and mixtures thereof, and the insoluble particulate matter,

(2) contacting said treated article with an electroless plating bath to provide a layer comprising a member selected from the group consisting of a metal, a metal alloy, and mixtures thereof, said layer being substantially free of particulate matter substantially covering the particulate matter exposed from step 1, and subsequently

(3) removing a portion of the electrolessly deposited layer of step (2) thereby providing with a surface smoothness lower than that existing at the conclusion of step (1), however retaining sufficient amount of electroless metal from step (2) to substantially cover the particulate matter exposed from step (1).

17. A process for the metallization of a substrate useful in open-end spinning comprising the steps:

(1) contacting said substrate with an electroless plating bath further comprising insoluble suspended particulate matter to provide a composite layer comprising a member selected from the group consisting of a metal, a metal alloy, and mixtures thereof, and the insoluble particulate matter,

(2) contacting the treated substrate with an electroless plating bath to provide a layer comprising a member selected from the group consisting of a metal, a metal alloy, and mixtures thereof, said layer being substantially free of particulate matter substantially covering the particulate matter exposed from step (1), and subsequently

(3) removing a portion of the electrolessly deposited layer of step (2) thereby providing with a smoother surface finish in comparison to the surface finish existing at the conclusion of step (1), however retaining a sufficient amount of electroless metal from step (2) to substantially cover the particulate matter from step (1).

4,358,924

CHAIN WITH TOGGLE FASTENER

Ernst Jung, Scheibenstrasse 49, 4000 Düsseldorf 30, Fed. Rep. of Germany

Filed Mar. 31, 1980, Ser. No. 135,832
Claims priority, application Fed. Rep. of Germany, Apr. 5, 1979, 2913632
Int. Cl.³ F16G *15/08*
U.S. Cl. 59—82 **10 Claims**

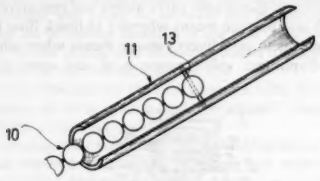
1. A chain with toggle fastener, comprising

a chain having ends, said chain defining a cross-sectional outer periphery,

at least one toggle being formed as a hollow rail defining therein a longitudinally extending open cross-section,

one of said ends of said chain is pivotally connected to and in said hollow rail of said toggle,

said open cross-section corresponds substantially to the cross-sectional outer periphery of an end portion of said chain adjacent said one end,



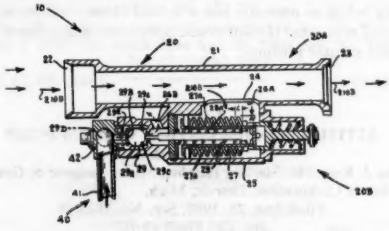
said end portion of said chain is selectively containable in said open cross-section of said hollow rail in a fastening-unfastening transitional position of said end portion relative to said hollow rail and extends out from said open cross-section of said hollow rail in other positions of said end portion relative to said hollow rail.

4,358,925

TEMPERATURE SENSING ASSEMBLY

Raymond L. Williams, Evendale, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jul. 15, 1980, Ser. No. 169,020
Int. Cl.³ F02C 7/18
U.S. Cl. 60—39.07 **6 Claims**



1. A temperature sensing assembly for use with a flow of gaseous medium having a constituent stream with a changing temperature, comprising;

a. means for continuously sensing changes in temperature of said constituent stream of said flow of gaseous medium, wherein a portion of this means is disposed such as to be in said flow of said constituent stream, and wherein this means includes:

a stream flow-through portion in the structural form a pipe having a first end and a second end, with said pipe disposed such that said constituent stream flows into said first end and flows out of said second end, and with said pipe having an opening located at a position intermediate to said ends, across which opening said stream flows and into which opening a portion of said stream enters; and

a temperature change sensing portion disposed adjacent to and connected to said stream flow-through portion of this means, with said temperature change sensing portion in communication with said stream flow-through portion, wherein said temperature change sensing portion comprises:

(1) a housing connected to said stream flow-through portion of this means, wherein this housing has a first opening and a second opening, with said first opening in communication with said opening in said stream flow-through portion of this means, and with said second opening leading into an ambient environment external of this housing and external of this means;

(2) means, disposed internal of said housing, for contracting and for expanding, in response to changes of temperature of said constituent stream, wherein this means includes a plurality of adjacent, captively-held, bimetallic discs, each of which has a length and a height, and wherein each metallic disc of said plurality:

contracts, by decreasing in length and by simultaneously increasing in height, when said temperature of said constituent stream falls to a temperature within a first preselected range of temperatures;

expands partially, by increasing in length and by simultaneously decreasing in height, when said temperature of said constituent stream rises to a temperature within a second preselected range of temperatures;

and expands fully, by further increasing in length and by simultaneously further decreasing in height, when said temperature of said first constituent stream rises to a temperature within a third preselected range of temperatures;

(3) means for biasing said means for contracting and for expanding against increase in length, with this biasing means disposed internal of said housing; and

(4) a spring-loaded ball valve subassembly operatively associated with said means for contracting and for expanding, wherein said ball valve subassembly includes a ball member that is captively held by a spring between a first seat and a second seat that is diametrically disposed with relationship to said first seat, with said ball member selectively positionable:

in said first seat, and thereby closing said valve;

in said second seat, and thereby closing said valve;

and, in a location intermediate said first seat and said second seat, and thereby opening said valve

and, wherein said ball valve subassembly has an opening therein, adjacent to and in communication with said first seat;

b. means, responsive to actuation of said means for continuously sensing changes in temperature of said constituent stream of flow, for selectively preventing said flow of said constituent stream, wherein a portion of this flow-prevention means is disposed across said flow of said constituent stream; and

c. means for operatively connecting said means for continuously sensing changes in temperature of said constituent stream to said means for selectively preventing said flow of said constituent stream, and for allowing said means for selectively preventing said flow of said constituent stream to be responsive to actuation of said means for continuously sensing changes in temperature of said constituent stream of flow, wherein this means comprises a gas impervious conduit having a first end connected to an opening in said means for continuously sensing changes in temperature of said constituent stream, and having a second end connected to an opening in said means for selectively preventing said flow of said constituent stream.

4,358,926

TURBINE ENGINE WITH SHROUD COOLING MEANS

Raymond Smith, Monclova, Ohio, assignor to Teledyne Industries, Inc., Los Angeles, Calif.

Continuation of Ser. No. 939,886, Sep. 5, 1978, abandoned. This application Jul. 30, 1980, Ser. No. 173,832
Int. Cl.³ F02C 7/12
U.S. Cl. 60—39.83 **7 Claims**

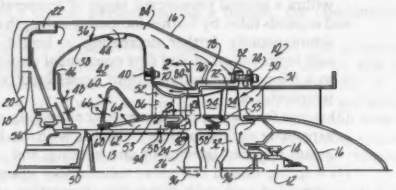
1. In a turbine engine of the type having a support housing, an air compressor rotatably mounted in said housing and having an inlet and an outlet, a combustor in said housing, said combustor having a chamber fluidly connected with the outlet

from the compressor, means for supplying fuel to said combustor chamber, at least one turbine wheel rotatably mounted to said support housing and at least one stator vane connected to said support housing, and an annular shroud attached to said housing coaxially around said turbine wheel, the improvement which comprises:

an annular wall secured to said support housing coaxially around and spaced radially outwardly from said shroud and forming an annular chamber therebetween,

first fluid passage means in said support housing between said compressor outlet and the outer periphery of said annular wall for diverting a portion of said compressor output to said outer periphery of said annular wall,

said annular wall having a plurality of openings which provide fluid communication from said compressor outlet and to said annular chamber so that air flow through said openings impinges against said outer periphery of said



shroud, and wherein each of said openings is in radial alignment with one of said at least one turbine wheel so that the entire diverted portion of said compressor output flows through said openings and into said openings and into said annular chambers,

said at least one stator vane having a fluid passageway formed therethrough, said fluid passageway having a portion adjacent the upstream edge of said stator vane, said fluid passageway being open at one end only to one end of said annular chamber so that all of said diverted portion of the compressor output flows into said annular chamber, against said shroud and thereafter flows through said vane fluid passageway to thereby cool said vane; and

second fluid passage means for fluidly connecting the other end of said vane fluid passageway and said combustor chamber and for returning a major portion of said diverted portion of said compressor output to said combustor chamber.

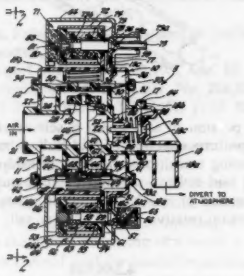
4,358,927

PRESSURE OPERATED PROPORTIONAL AIR MANAGEMENT VALVE

Edward G. Day; Gordon R. Paddock, and Edward H. Seidewand, all of Rochester, N.Y., assignors to General Motors Corporation, Detroit, Mich.

Filed Jan. 22, 1981, Ser. No. 211,068
Int. Cl.³ F01N *3/22*
U.S. Cl. 60—290 **3 Claims**

1. An air pump pressure operated, proportional air management valve for controlling the selective delivery of air from an engine driven air pump either to the exhaust ports of an engine, to the center of a dual bed converter in the engine exhaust system, or to the atmosphere, said air management valve comprising: a housing means defining a passage means connectable at one end to the air pump, a converter passage with a flow orifice therein, a port passage, and a divert passage, each in flow communication at one end with said passage means and being connectable to the converter, to the exhaust ports of the engine and to the atmosphere, respectively, and an air relief passage, with a pressure relief valve therein, in flow communication at one end with said passage means and at its other end with the atmosphere; a port air control diaphragm valve means operatively associated with said passage means for movement between an open position and a closed position to control flow from said passage means to said port passage; a first spring means and a solenoid valve controlled atmospheric pressure chamber means operatively associated with one side of said port air control diaphragm valve means to normally bias it to said closed position and to control movement thereof to said open position; a valve means operatively connected to said port air control diaphragm valve means and operatively associated with said passage means whereby to block flow from said passage means to said divert passage means when said port air control diaphragm valve means is in said open position; a



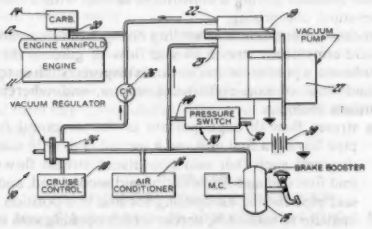
proportional air control diaphragm valve means operatively associated with said divert passage so as to operate between an open position and a closed position whereby to control flow through said divert passage; and, a second spring means and a solenoid valve controlled exhaust pressure chamber means connectable to the exhaust system with both operatively associated with one side of said proportional air control diaphragm valve means to normally bias it to said closed position and to control movement thereof to said open position as a function of engine exhaust pressure.

4,358,928

ALTITUDE COMPENSATION VACUUM PUMP CONTROL

Allan J. Kotwicki, Sterling Heights, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 28, 1980, Ser. No. 182,018
Int. Cl.³ F04B *49/02*
U.S. Cl. 60—397 **4 Claims**



1. An altitude compensating control device for use in a vacuum supply system for operating automotive vehicle accessories and including a vacuum pump connected for operation to supply regulated vacuum to such system, said control device comprising

a housing having first and second movable interior walls defining respectively first and second expansible chambers and a closed intermediate chamber,

means connecting said movable walls for coincident motion

oppositely varying the volumes of their respectively defined first and second chambers

actuating means connected with the movable walls and movable therewith into "on" and "off" positions corresponding to contraction and expansion respectively of said second chamber volume, said actuating means being adapted for operative connection with such vacuum pump to operate the pump to increase the regulated vacuum when the actuating means is in the "on" position,

biasing means urging said actuating means toward the "on" position to operate such pump, and

means to communicate the first chamber with the regulated vacuum of such system and the second chamber with ambient pressure,

said movable wall means having a combination of effective areas exposed to chamber pressures and relative coincident motion determined by the connecting means such as to develop opposing forces which balance the force of said biasing means when the regulated vacuum is at a prescribed level and which vary such prescribed vacuum level as a function of ambient pressure,

whereby, in normal use, movement of said actuating means in response to variations in pressure in said first and second chambers is effective to control operation of such pump to maintain such regulated vacuum substantially at a predetermined altitude-compensated pressure level and, upon opening either of said first and intermediate chambers to ambient pressure, said control device will continue to operate the pump to provide a substantial vacuum level for accessory operation.

4,358,929

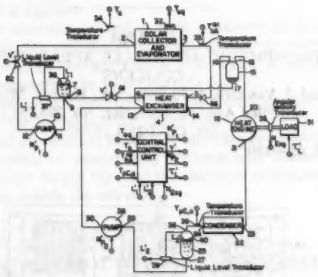
SOLAR POWER SYSTEM

Stephen Molivadas, 2800 Upton St., NW., Washington, D.C. 20008

Continuation-in-part of Ser. No. 457,271, Apr. 2, 1974, Pat. No. 4,211,207, which is a continuation-in-part of Ser. No. 902,950, May 4, 1978. This application Apr. 28, 1980, Ser. No. 144,275

Int. Cl.³ F03G *7/02*

U.S. Cl. 60—641.8 **41 Claims**



1. A power system for driving a mechanically-driven device comprising a working fluid, whose thermodynamic state traverses a Rankine power cycle, in a working fluid circuit which includes:

(a) means for heating and vaporizing a liquid portion of said working fluid entering said heating and vaporizing means;

(b) a heat engine in which the vapor generated in said heating and vaporizing means is expanded, said engine being employed to drive said mechanically-driven device;

(c) means for condensing said expanded vapor:

(d) means for pumping said condensed vapor back to said heating and vaporizing means; and

(e) means for controlling the temperature of vaporization of said working fluid by varying the torque presented to said engine by said mechanically-driven device, said temperature of vaporization being controlled to maximize a performance quantity related to the power delivered by said engine under the prevailing conditions external to said power system while supplying dry vapor to said engine.

4,358,930

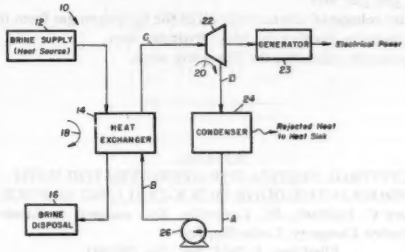
METHOD OF OPTIMIZING PERFORMANCE OF RANKINE CYCLE POWER PLANTS

William L. Pope, Walnut Creek; Howard S. Pines, El Cerrito; Padraic A. Doyle, Oakland, and Lenard F. Silvester, Richmond, all of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 23, 1980, Ser. No. 162,345

Int. Cl.³ F01K *7/32;* **F03G** *7/00*

U.S. Cl. 60—647 **33 Claims**



1. A method for operating a turbine to maximize energy conversion and/or fuel utilization efficiency including the step of:

expanding working fluid in a turbine with a turbine fluid inlet state which is substantially in the supercritical vapor region and substantially where the specific heat of the working fluid is a maximum.

4,358,931

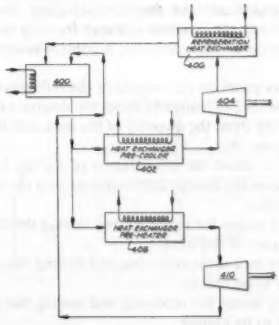
POWER CYCLES BASED UPON CYCLICAL HYDRIDING AND DEHYDRIDING OF MATERIAL OF A MATERIAL

Lynn E. Terry, 22 Suncrest Ave., Bridgeton, N.J. 08302, and Roger J. Schoeppel, P.O. Box 971, Stillwater, Okla. 74074

Division of Ser. No. 900,769, Apr. 27, 1978, Pat. No. 4,198,827, which is a division of Ser. No. 666,786, Mar. 15, 1976, Pat. No. 4,090,361. This application Mar. 3, 1980, Ser. No. 127,269

Int. Cl.³ F01K *25/06*

U.S. Cl. 60—649 **2 Claims**



1. A method for deriving power from a low grade thermal energy source employing a hydride-dehydride-hydrogen power cycle comprising:

combining hydrogen gas with a hydride-forming material under conditions of temperature and pressure such that a hydride saturated with, and in equilibrium with, hydrogen gas is formed;

heating the hydride at constant volume to a temperature above the equilibrium temperature of the hydride to chemically compress the hydrogen gas;

transferring heat to the hydride and concurrently releasing the hydrogen gas therefrom;

heating at least a portion of the released hydrogen gas to increase the enthalpy thereof over that of the hydrogen gas at the instant of release from the hydride;

conveying the hydrogen gas of increased enthalpy to a power producing expansion device;

expanding the hydrogen gas through said power producing expansion device to produce power and cool the hydrogen gas; and

after release of substantially all of the hydrogen gas from the hydride, cooling the spent hydride; then

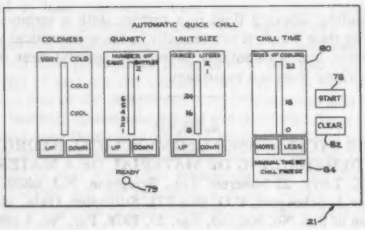
cyclically repeating the foregoing steps.

4,358,932

CONTROL SYSTEM FOR REFRIGERATOR WITH THROUGH-THE-DOOR QUICK-CHILLING SERVICE

Robert C. Helfrich, Jr., Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Sep. 3, 1981, Ser. No. 298,981
Int. Cl.³ G01K *13/00;* **G05D** *23/32;* **F25B** *19/00*
U.S. Cl. 62—126 **8 Claims**



1. In a refrigerator apparatus including a freezer compartment having a quick-chilling chamber for items to be quick chilled and a timer-operated fan to introduce cold air from the freezer compartment into the quick-chilling chamber and means to maintain the chamber at above-freezing temperatures after termination of fan operation, a control system comprising:

(a) a display panel on the outside of the refrigerator accessible to the user to manually select the desired chill temperature of the item, the quantity of the item, and the unit size of the item,

(b) means to sense the temperature of the air being introduced from the freezer compartment into the quick-chilling chamber,

(c) memory means for receiving and storing the desired chill temperature of the item,

(d) memory means for receiving and storing the quantity of the item to be chilled,

(e) memory means for receiving and storing the unit size of the item to be chilled,

(f) means comparing the values (b) through (e) to predict when the item to be chilled will reach the desired temperature and set the timer run time accordingly, and

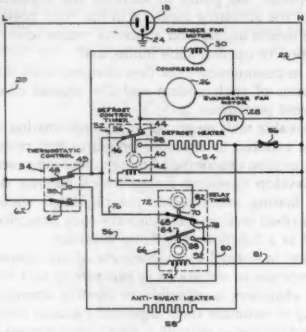
(g) manual select means for starting the timer to run.

4,358,933

HOUSEHOLD REFRIGERATOR DEFROST SYSTEM

Julius B. Horvay, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Jan. 19, 1981, Ser. No. 225,922
Int. Cl.³ F25D *21/06*
U.S. Cl. 62—155 **3 Claims**



1. In a refrigerating system including a compressor, an evaporator and a condenser;

(a) temperature control means to energize and de-energize the compressor,

(b) an electrical defrost heater for periodically warming the evaporator to defrost temperatures,

(c) an electrical motor-driven defrost control timer to energize and de-energize the defrost heater and having a predetermined period of run time between initiation of each successive defrost cycle,

(d) means to energize and run the defrost control timer only when the compressor is energized, and

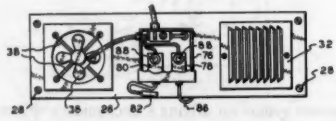
(e) means to automatically delay the running of the defrost control timer for a fixed period of time each time the compressor is energized.

4,358,934

ATMOSPHERIC AIR INTAKE APPARATUS FOR COOLERS

Raymond J. VanKirk, 5370 Folks Rd., Horton, Mich. 49246

Filed Aug. 24, 1981, Ser. No. 295,751
Int. Cl.³ F25D *17/00*
U.S. Cl. 62—180 **5 Claims**



1. Apparatus for utilizing exterior atmospheric air for cooling an enclosure having an inner surface comprising, in combination, a panel, means for mounting said panel upon the enclosure inner surface, an atmospheric air inlet defined in said panel, an enclosure air exhaust outlet defined in said panel spaced from said inlet, an electric exhaust fan mounted upon said panel for direct communication with the enclosure for selectively exhausting air through said exhaust outlet, a first air duct having a first end in alignment with and communicating with said panel inlet and a second end in communication with atmospheric air, an electric atmospheric air supply fan having an outlet in communication with said first air duct at said second end and located within the atmospheric air, a second air

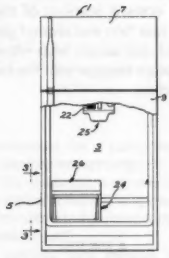
duct having a first end in alignment with and in communication with said exhaust outlet and a second end in communication with the atmospheric air, said exhaust and air supply fans having substantially equal air flow rates, and air temperature responsive fan control means electrically connected to said air supply and exhaust fans sensing the enclosure and atmospheric air temperatures to simultaneously energize said fans at predetermined enclosure and atmospheric temperature conditions.

4,358,935

APPARATUS TO PRESERVE VEGETABLES

Gehard K. Losert, and William M. Webb, both of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Filed Jul. 2, 1981, Ser. No. 279,641
Int. Cl.³ F25D *17/02*
U.S. Cl. 62—188 **11 Claims**



1. In apparatus for preserving and rejuvenating items such as vegetables and the like in a storage assembly in a refrigerator maintained at a temperature of between 33° F. and 58° F. by surrounding the items with a fog composed of water particles having a diameter of between 1 and 20 microns generated by means of an ultrasonic wave nebulizer with a transducer element, an improved storage assembly comprising;

a cover;

a pan in sealing arrangement with the cover and movable relative thereto;

a water reservoir located in close proximity to the pan and having the transducer element of the ultrasonic wave nebulizer in communication with water in the reservoir for generating the water particle fog;

a passageway for delivering the fog from the interior of the reservoir to the interior of the pan;

electrical connection means for enabling the nebulizer; and

timer means to periodically energize and deenergize the nebulizer during the time the electrical connection means would enable the nebulizer.

4,358,936

ELECTRIC CONTROL METHOD AND APPARATUS FOR AIR CONDITIONERS

Yoji Ito, Kariya; Yozo Inoue, Chiryu, and Kiyoshi Hara, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Sep. 26, 1980, Ser. No. 191,814
Claims priority, application Japan, Oct. 1, 1979, 54-126962
Int. Cl.³ F25B *1/00*; B60H *3/00*
U.S. Cl. 62—229 **8 Claims**

1. An electric control method for an automobile air conditioner including a sensor for sensing an actual temperature within a passenger compartment of a vehicle, a temperature control means for selecting a desired passenger compartment temperature and cooling means responsive to the actual and desired temperatures for adjusting the passenger compartment temperature to the desired temperature, the control method comprising the steps of:

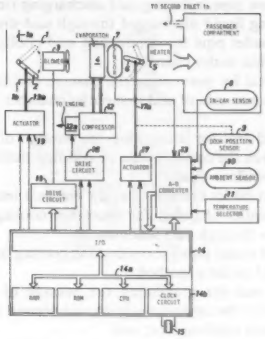
(a) detecting an actual passenger compartment temperature;

(b) determining a selected temperature from said temperature control means;

(c) determining a deviation between the actual passenger compartment temperature and the selected temperature;

(d) repeating steps (a), (b) and (c) upon each lapse of a predetermined period of time;

(e) comparing a current determined deviation with a predetermined first positive value and activating said cooling means when the determined deviation is larger than said first value;



(f) comparing the current determined deviation with a previously determined deviation when the determined deviation is smaller than or equal to said first value;

(g) deactivating said cooling means when the current detected deviation is smaller than the previously detected deviation;

(h) maintaining said cooling means in its activated or deactivated condition when the current detected deviation is larger than the previously detected deviation; and

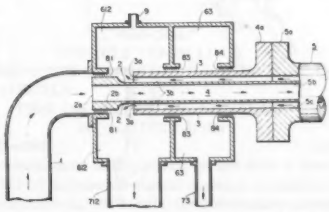
(i) activating said cooling means when the current detected deviation is larger than each of said first value and said previously detected deviation.

4,358,937

DEVICE FOR CONDUCTING COOLING LIQUID IN AND OUT OF LIQUID COOLED ROTOR TYPE ROTARY ELECTRIC MACHINE

Kouichi Okamoto, Kobe; Masaki Sakuyama, Ashiya; Shoji Furukado, and Norio Oishi, both of Kobe, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 1, 1980, Ser. No. 211,994
Int. Cl.³ F25B *31/00*
U.S. Cl. 62—505 **7 Claims**



1. A device for conducting cooling liquid in and out of a liquid cooled rotor type machine comprising:

an inlet pipe for conducting in a cooling liquid;

a cylindrical inflow pipe having one end coupled to a rotor

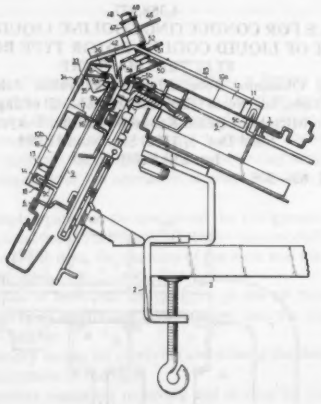
shaft of said machine with the other end open for introducing said cooling liquid from said inlet pipe;
a cylindrical outflow pipe coaxially disposed around said inflow pipe with a gap of predetermined length therebetween, said outflow pipe having one end connected to said rotor shaft, said gap conducting out cooling liquid, the other end of said outflow pipe being open;
a discharging ring having small holes formed therein, said discharging ring being disposed to cover said open end of said outflow pipe;
a first outlet chamber surrounding said open end of said outflow pipe including said discharging ring for receiving cooling liquid discharged through said discharging ring;
a first outlet pipe for conducting said cooling liquid out of said first outlet chamber;
a first seal for preventing the passage of cooling liquid between one side of said first outlet chamber and said inflow pipe;
a second seal for preventing the passage of cooling liquid between the opposite side of said first outlet chamber and said outflow pipe;
a second outlet chamber having one side integral with said first outlet chamber for receiving cooling liquid which passes through said second seal;
a second outlet pipe for conducting cooling liquid out of said second outlet chamber;
a third seal for preventing the passage of cooling liquid between the opposite side of said second outlet chamber and said outflow pipe; and
a gas supplying pipe for supplying a shielding gas into said first outlet chamber and maintaining the pressure in said first outlet chamber higher than atmospheric pressure,
said first outlet chamber being only partially filled with cooling liquid.

4,358,938

HAND KNITTING MACHINE

Kojiro Sasaki, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Japan

Filed Sep. 21, 1981, Ser. No. 303,873
Claims priority, application Japan, Oct. 2, 1980, 55-138333
Int. Cl.³ D04B *7/04, 7/00*
U.S. Cl. 66—64 **3 Claims**



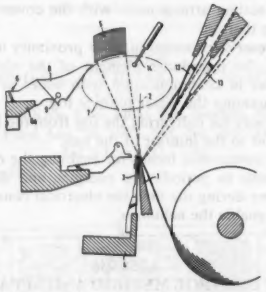
1. A hand knitting machine comprizing,
first and second needle beds arranged at the predetermined positions relative to each other,
a plurality of first latch needles aligned slidably on said first needle bed, a plurality of second latch needles aligned slidably on said second needle bed,
a carriage mounted slidably on said first and second needle beds in the longitudinal direction thereof,
a first path located at an underportion corresponding to said first needle bed, said first path guiding butts of said first latch needles which carry loops of yarn to be transferred to said second latch needles so as to move said first latch needles in the direction perpendicular to the longitudinal direction of said first needle bed,
a second path located at an underportion of said carriage corresponding to the second needle bed, said second path guiding butts of said second latch needles which receive said loops of yarn transferred from the first latch needles so as to move said second latch needles in the direction perpendicular to the longitudinal direction of said second needle bed, whereby hooks of second latch needles engage with said loops of yarn, and
needle detent means mounted on said carriage for regulating the position of forward portions of the first and second latch needles in said first and second paths to the longitudinal direction of said needle beds when the hooks of the second latch needles engage with the loops of yarn on the first latch needles.

4,358,939

RASCHEL WARP KNITTING MACHINE

Karl Kohl, Obertshausen, Fed. Rep. of Germany, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Jun. 6, 1980, Ser. No. 157,055
Claims priority, application Switzerland, Jun. 15, 1979, 5613/79
Int. Cl.³ D04B *23/00, 27/00*
U.S. Cl. 66—203 **4 Claims**



1. A Raschel warp knitting machine comprising
a plurality of needles;
a plurality of parallel lapping belts for guiding pattern yarns to said needles;
first means for selectively shogging said belts in a shogging direction parallel to said belts;
a yarn laying-in comb for laying the pattern yarns into said needles, and comb being mounted for orbital motion perpendicular to said shogging direction;
at least one guide bar having needle guides for guiding stitch yarns to said needles, said guide bar being mounted for oscillation perpendicular to said shogging direction; and
means for driving said comb for a uniform selectable shogging distance in said shogging direction.

4,358,940

PATTERN MECHANISM FOR A WARP KNITTING MACHINE

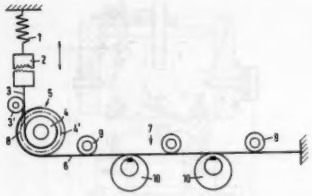
Hans Gubler, Seuzach, and Otto Hintsch, Wallisellen, both of Switzerland, assignors to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Jun. 3, 1980, Ser. No. 155,921

Claims priority, application Switzerland, Jun. 15, 1979, 5614/79

Int. Cl.³ D04B *23/00*

U.S. Cl. 66—207 10 Claims



1. A pattern mechanism for a guide bar of a warp knitting machine, said mechanism comprising

a tension element for connection at one end to the guide bar;

at least one final control element disposed along an opposite end of said tension element for reciprocating the guide bar in a shogging direction; and

a reduction gear guiding said tension element thereon for changing the shogging of the guide bar without changing said final control element.

4,358,941

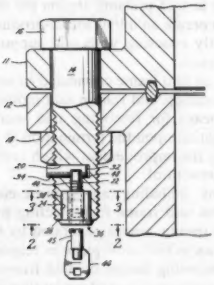
SECURITY METHOD AND APPARATUS

John C. Zimmer, 502 Estate Dr., New Iberia, La. 70560

Filed Oct. 20, 1980, Ser. No. 198,299

Int. Cl.³ E05B *67/36;* F16B *21/12, 39/06, 41/00*

U.S. Cl. 70—229 1 Claim



1. A security device, which comprises:

a cylindrical bolt having formed therein a radial first hole substantially perpendicular to the axis of said bolt, a threaded second hole formed coaxial with said bolt and intersecting said first hole, and a third hole formed coaxial with said second hole and connecting said second hole with the end of said bolt, said third hole having a flat side;

a nut threadably engageable with said bolt;

a bar insertable into said first hole, said bar having a length long enough such that an end thereof extends radially outside said bolt when said bar is inserted in said first hole, said bar having a notch therein alignable with said second hole when said bar is inserted in said first hole;

and a key-operable pick-resistant lock including a lock body conformed to fit said third hole and a key-operable screw engageable with said second hole, said screw including key-releasable lock structures and being adapted to screw into said second hole to engage said notch of said bar.

4,358,942

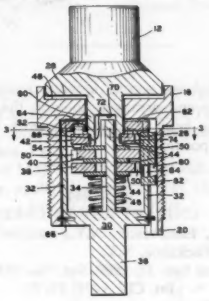
COMBINATION LOCK

Jerry L. Mattson, R.R. 3, Buffalo, Minn. 55313

Filed Nov. 29, 1978, Ser. No. 964,571

Int. Cl.³ E05B *37/04*

U.S. Cl. 70—303 A 11 Claims



1. A combination lock comprising, in combination:

(A) a bolt moveable between a locked and an unlocked position;

(B) a bolt cam for moving said bolt between said locked and unlocked positions;

(C) a plurality of tumblers each having a gate and which gates are collectively alignable to form an unlocking cage and when so aligned correspond to an open position of the lock;

(D) knob means for dialing the lock combination to align said gates and for operating said bolt cam to open said lock, said knob being longitudinally positionable along its axis of rotation between one position for a bolt cam operating mode of movement and another position for a tumbler driving mode of movement; and

(E) free floating locking means for preventing said bolt cam from moving said bolt prior to alignment of said gates having formed an unlocking cage but cooperating with said unlocking cage formed by alignment of said gates to release said bolt cam for movement of said bolt to unlock the lock upon said knob having been initially rotated through the proper sequence of clockwise and counterclockwise rotations and thereafter moved to operate said bolt cam which in turn moves said bolt to said unlocked position.

4,358,943

VEHICLE DOOR LOCK

Benoit Ouellet, 1053 Imperial St., Greenfield Park, Quebec, Canada (J4V 1L5)

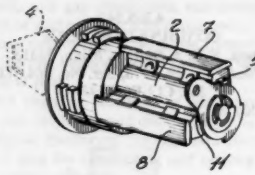
Filed Aug. 28, 1980, Ser. No. 182,459

Int. Cl.³ E05B *27/06*

U.S. Cl. 70—358 3 Claims

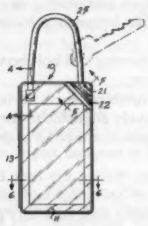
1. In a vehicle door lock adapted for use with a door latch also operated by an internal manual actuator including a lock-unlock pushbutton and/or handle, the combination comprising an inner barrel having a key-receiving slot, a fixed casing engaged around the inner barrel and rotatively carrying the latter, a first and a second tumbler assemblies carried by the fixed casing at predetermined angular positions around the rotation axis of the barrel and having each a tumbler lockingly engageable into the key-receiving slot to rotatively lock the

barrel in either of a first and a second angular position corresponding to the predetermined angular positions defined by said first and second tumbler assemblies respectively, and a latching lug secured to the barrel and rotatable therewith



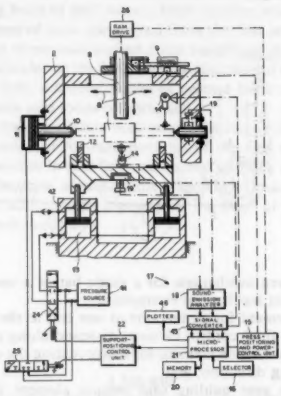
between said first and second locking positions of the barrel and constructed and arranged to lock the internal manual actuator and the latch upon rotation with the barrel to the second locking position.

4,358,944
UNITARY KEY HOLDER
John F. Stoffel, Eastchester, N.Y., assignor to Stoffel Seals Corporation, Tuckahoe, N.Y.
Filed Sep. 17, 1980, Ser. No. 187,902
Int. Cl.³ A47G *29/10*
U.S. Cl. 70—457 **8 Claims**



1. A key holder of flexible and resilient material for removably holding at least one key, comprising first and second members, hinge means connecting said members together along contiguous side edge portions thereof, one of said members having first engaging means extending along an edge portion which is remote from said hinge means, the other of said members having second engaging means extending along an edge portion thereof and which engages the first engaging means of said one member for holding said first and second members in facing abutting relationship, said first member having a corner portion removed adjacent to the side edge portion which is remote from the hinge means, the corner portion of said second member which is contiguous to said corner portion of said first member being exposed on both sides and may be grasped and bent away from said first member in order to separate said members, a retainer integrally connected at one end to said second member adjacent to said corner that is exposed on both sides thereof, said retainer having a head at its other end which is larger than the main body of said retainer, said second member having a recess adjacent to the hinged edge, said recess being configured for removably receiving a portion of said head and the adjacent portion of said retainer, said head and the adjacent portion of said retainer then being held jointly between said first and second members, whereby when said first and second members are closed together, the closing force applied at the sides of the members which are remote from the hinged portions acts through leverage to hold the head end of the retainer between the members.

4,358,945
GAG PRESS
Karl-Heinz Pärtzel, Friedrichshafen, Fed. Rep. of Germany, assignor to Zahnradfabrik Friedrichshafen, Aktiengesellschaft, Friedrichshafen, Fed. Rep. of Germany
Filed Jul. 16, 1980, Ser. No. 169,471
Claims priority, application Fed. Rep. of Germany, Jul. 17, 1979, 2929731
Int. Cl.³ B21D *3/10*; G01H *15/00*
U.S. Cl. 72—12 **12 Claims**



1. In a gag press for straightening a metal workpiece, comprising:

a frame;

support means on said frame at a pressing station for holding said workpiece during straightening operations in a position wherein the workpiece is straightened;

feed means extending to said pressing station for conveying said workpiece to said support means prior to said straightening operations;

stressing means including a ram reciprocatably mounted on said frame at said pressing station for striking said workpiece to generate an initial sound-producing pulse and for subsequently coacting with said support means to bend said workpiece;

drive means on said frame connected to said stressing means for reciprocating said ram in said mounting means;

extracting means for removing said workpiece from said pressing station upon the termination of said straightening operations, the improvement which comprises the combination therewith of:

sensor means including an acoustic-electric transducer mounted on said frame for detecting pressure waves including ultrasonic waves generated by internal structural irregularities in said workpiece in response to said pulse;

adjustable mounting means on said frame for holding said ram in a preselected one of a plurality of positions; and

electrical circuit means connected to said sensor means for analyzing signals therefrom to determine the presence, location and extent of internal structural irregularities in said workpiece.

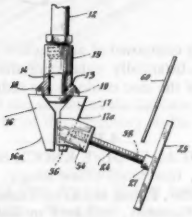
4,358,946
POWER TOOL
Robert Gallart, 107 Pershing Ave., Locust Valley, N.Y. 11560
Filed Dec. 1, 1980, Ser. No. 211,753
Int. Cl.³ B21D *1/12*; B25B *13/58*
U.S. Cl. 72—392 **5 Claims**

1. Apparatus for remotely applying the expansion force generated between a pair of spreadable jaws of a spreadable jaw power tool said apparatus including:

a sleeve fitable around one jaw of said pair of spreadable jaws,

a hole in said sleeve extending through said sleeve and communicating with the outer surface of the jaw around which said sleeve is fitted, said hole being tapped to receive and retain a threaded shaft,

a threaded shaft screw coupled into said tapped hole and sufficiently long so as to make contact with the said outer surface of said jaw for forceable separating one inside surface of said sleeve from said outer surface of said jaw



and for frictionally engaging another inside surface of said sleeve to another outer surface of said jaw for forceable locking said sleeve on to said jaw, and

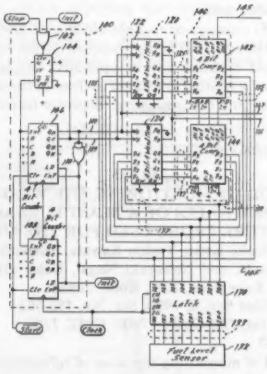
an expansion force distributing member coupled to the end of said threaded shaft opposite from that end of said shaft making contact with said jaw whereby said expansion force normally generated between said one jaw of said pair of jaws and the other jaw of said pair of jaws is applied between said other jaw and said expansion force distributing member.

4,358,947

METHOD AND APPARATUS FOR VOLUMETRIC CALIBRATION OF LIQUID FLOW SENSOR OUTPUT SIGNALS

Edward S. Greene, Allen Park, and Eric M. Knight, Inkster, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 22, 1980, Ser. No. 219,123
Int. Cl.³ G01L *25/00*
U.S. Cl. 73—3 **9 Claims**



1. A system for calibrating the reproducible accuracy of an electrical output signal produced by a liquid flow sensor that monitors liquid flowing from a storage tank, wherein said storage tank contains a liquid level sensor which produces an electrical output signal having a value corresponding to the sensed level of said liquid, said system comprising:

means for storing the values of said liquid level electrical output signal at a designated initial level of said liquid in said tank and at a second designated level separated from said initial value by a predetermined volume of liquid added to said tank;

means for accumulating said electrical signal from said liquid flow sensor over a period of time corresponding to the time that said liquid level sensor output signal value corresponds to sensed levels between said designated levels and outputing an accumulation signal when said level sensor output signal value corresponds to said initial level; and

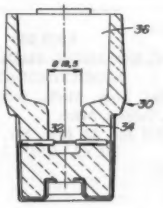
means for factoring said electrical signal from said liquid flow sensor by an amount corresponding to said accumulation signal to produce a calibrated flow sensor output signal.

4,358,948

METHOD AND APPARATUS FOR PREDICTING METALLOGRAPHIC STRUCTURE

Jacques Plessers, Houthalen, Belgium, assignor to Electro-Nite Co., Philadelphia, Pa.

Filed May 5, 1978, Ser. No. 903,349
Claims priority, application France, May 18, 1977, 77 15402
Int. Cl.³ G01N *25/04*
U.S. Cl. 374—26 **16 Claims**



1. A process for predicting the metallographic structure of casting comprising:

(a) obtaining a sample of molten metal,

(b) cooling said sample,

(c) ascertaining a parameter of thermal conductivity of the sample during step (b) and when thermal conductivity has a minimal influence as the cooling rate of the sample,

(d) using said parameter of thermal conductivity to predict a metallographic structure of said casting.

4,358,949

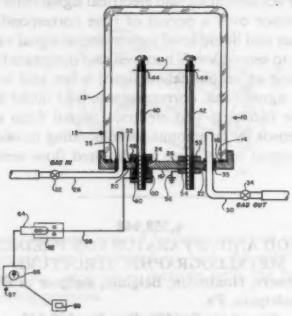
ARGON PURITY TESTER

James M. MacFarland, Frederica, and Bernard W. Kappe, Wyoming, both of Del., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Nov. 13, 1980, Ser. No. 206,412
Int. Cl.³ G01N *27/16*
U.S. Cl. 73—23 **9 Claims**

1. An inert gas purity tester comprising a housing, said housing including a transparent member open at one end thereof and a base plate removably sealing said open end of said transparent member; means located within said housing for passing a current therethrough, said current passing means including a pair of conductive elements and a thin wire filament electrically connected therebetween and wherein one of said conductive elements is grounded; means operably connected to said housing for passing said inert gas through said housing at a preselected flow rate; and means operably connected to the other of said conductive elements for providing sufficient current to pass through said thin wire element in order to cause said thin wire filament to glow white, said current providing means including an electrical power source

having means for controlling the power output therefrom, means for removably connecting said power source to said other conductive element, and means connected to said power source for turning said power source to its fully on position



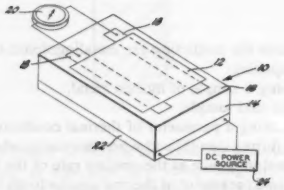
whereby the presence of an impurity within said inert gas passing through said housing causes smoke to appear adjacent said thin wire filament thereby indicating the existance of said impurity within said inert gas.

4,358,950

DETECTING NO_x USING THIN FILM ZINC OXIDE SEMICONDUCTOR

Shih-Chia Chang, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jan. 23, 1981, Ser. No. 227,748
Int. Cl.³ G01N *27/04*
U.S. Cl. 73—23 **4 Claims**



1. A method for detecting the presence of a nitrogen oxide compound in an oxygen-containing atmosphere comprising measuring the electrical resistance of a zinc oxide thin film semiconductor exposed to said atmosphere, said zinc oxide having an electrical resistance that is sensitive to ambient nitrogen oxide compounds, said film having a predetermined resistance when exposed to a like oxygen-containing gas free of nitrogen oxide compounds, whereby the presence of nitrogen oxide compounds in the atmosphere is indicated by a substantial increase in the film resistance over said nitrogen oxide-free value.

4,358,951

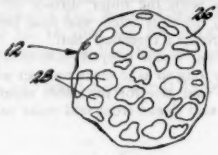
ZINC OXIDE THIN FILM SENSOR HAVING IMPROVED REDUCING GAS SENSITIVITY

Shih-Chia Chang, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 17, 1981, Ser. No. 235,082
Int. Cl.³ G01N *27/04*
U.S. Cl. 73—23 **6 Claims**

1. A device for detecting a gaseous reducing species comprising

a thin film semiconductor comprising a continuous sputtered zinc oxide material and having a gas-sensing surface comprising discrete microscopic alloy bodies surrounded by the zinc oxide, said film being adapted for measuring the electrical resistance of the zinc oxide across the film, said



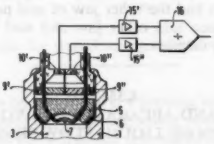
bodies being composed of an effective palladium and gold alloy for substantially enhancing the sensitivity of the resistance of the zinc oxide to the reducing species.

4,358,952

OPTICAL ENGINE KNOCK SENSOR

Helmut Maurer, Horrheim; Franz Rieger, Aalen-Wasseralfingen; Klaus Müller, Tamm, and Ernst Linder, Mühlacker, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Dec. 9, 1980, Ser. No. 214,513
Claims priority, application Fed. Rep. of Germany, Mar. 26, 1982, 3011570
Int. Cl.³ G01L *23/22*
U.S. Cl. 73—35 **11 Claims**



1. A sensor system for detecting oscillations occurring during detonations in an internal combustion engine, having at least one optical detector positioned in the combustion chamber of the engine comprising

a threaded housing for threaded engagement in the combustion chamber wall;

a window (5) transparent to light closing off the housing;

an optical detector (10) being disposed in the housing and behind said window (5) in optically coupled relation thereto; and a heater (7) located in front of the window (5) for burning off contaminating deposits forming on the window.

4,358,953

METHOD OF MONITORING THE WEAR OF REFRACTORY WALLS OF A BLAST FURNACE AND TEMPERATURE PROBE USED FOR THE METHOD

Takefumi Horiuchi, Kobe; Yoshio Kawate, Toyonaka; Masami Konishi, Akashi, and Nobuyuki Nagai, Kobe, all of Japan, assignors to Kobe Steel, Ltd., Kobe, Japan

Filed Sep. 2, 1980, Ser. No. 183,452
Int. Cl.³ G01N *17/00;* G01K *1/02*
U.S. Cl. 374—7 **8 Claims**

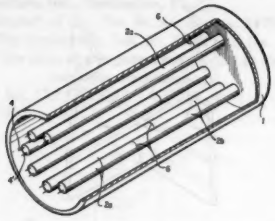
1. A method of monitoring the wear of refractory walls of a blast furnace wherein the furnace walls have temperature probes embedded therein, comprising the steps of:

developing electric representations of the internal phenomena of the blast furnace as trigger signals;

measuring temperatures at different points across the thickness of the furnace walls by the temperature probes embedded in the refractor walls; and

analyzing the relation of the time delay for each trigger

signal and temperature probe output signals correlated with the radical distance between the temperature measuring points and the center of the furnace so as to predict location of wear of the refractory walls.

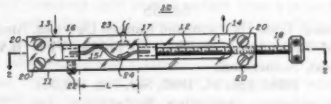


4,358,954

TRAVELING WAVE FLOW METER

Joannes N. M. de Jong, West Ford, Mass., assignor to Sperry Corporation, New York, N.Y.

Filed Nov. 24, 1980, Ser. No. 210,088
Int. Cl.³ G01F 3/20
U.S. Cl. 73—269 5 Claims



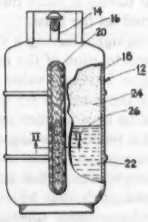
1. A positive displacement flow meter comprising:
(A) means for conducting fluid, having at least first and second walls;
(B) flexure means disposed longitudinally in said conducting means for undulating between said first and second walls of said conducting means in response to fluid flow within said conducting means, said flexure means having:
(1) a wavelike strip of flexible material of length X which is forced to occupy a length L, wherein L<X,
(2) means for holding at least one end of said flexible strip, and
(3) means for adjusting said holding means within said conducting means;
(C) means for detecting the frequency of said flexible strip as it undulates between said first and second walls.

4,358,955

LIQUID LEVEL GAUGE

Joseph M. Rait, Buffalo, N.Y., assignor to Technomadic Corporation, Buffalo, N.Y.

Filed Sep. 29, 1980, Ser. No. 192,427
Int. Cl.³ G01K 11/12, 23/02
U.S. Cl. 73—295 3 Claims



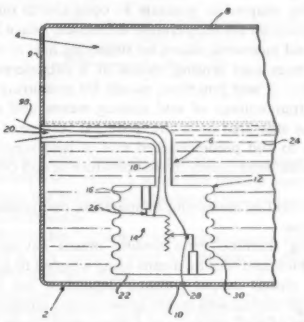
1. In a direct reading external liquid level gauge for measuring the contents level of opaque containers of magnetic material, an elongate strip of material including a base layer having a thermo- thermochromatic coating, the improvement comprising said base layer formed of extremely thin heat conducting metallic material having magnetic material over its entire longitudinal extent for removably retaining said gauge on the container surface, whereby said elongate strip can be repeatedly secured to, removed from and relocated on containers of magnetic material.

4,358,956

LIQUID LEVEL INDICATOR

Samuel Ruben, New Rochelle, N.Y., and Philip E. Kalker, Dumarest, N.J., assignors to Emdee Corporation, Northvale, N.J.

Continuation-in-part of Ser. No. 29,967, Apr. 13, 1979, Pat. No. 4,207,766, which is a continuation-in-part of Ser. No. 824,046, Aug. 12, 1977, Pat. No. 4,227,410. This application Mar. 17, 1980, Ser. No. 130,936
The portion of the term of this patent subsequent to Oct. 14, 1997, has been disclaimed.
Int. Cl.³ G01F 23/14; G01L 4/04; H01C 1/08
U.S. Cl. 73—301 19 Claims

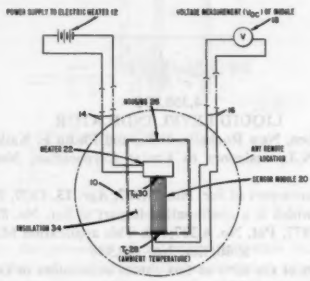


1. An indicator for measuring the liquid content of a container comprising a variable resistor assembly, said resistor comprising:
A. a housing mounted within said container attached to one wall thereof and extending into proximity with the bottom of said container,
B. said housing comprising a chamber located near the bottom of said container and an elongated neck extending from said chamber into fluid tight attachment with said container wall for communicating with the ambient atmosphere outside said container,
C. said chamber comprising an upper wall attached to said elongated neck, and a movable lower wall spaced from and located in substantial alignment with the bottom of said container, said lower wall adapted to move in response to the changes in liquid weight resulting from corresponding changes in said liquid content, and
D. a weight responsive variable resistor sensor means mounted within said chamber in communication with said movable lower wall, one end of said resistor sensor means connected to said upper wall and the other end of said resistor sensor means connected to said movable wall,
wherein the movement of said movable lower wall will cause a change in the electric current output of said resistor that will accurately reflect a particular level of liquid content.

4,358,957
TEMPERATURE MEASURING METHOD AND APPARATUS

Victor R. Lougheed, Hagerstown, and John W. McGrew, Westminster, both of Md., assignors to Teledyne Isotopes, Timonium, Md.

Filed Sep. 5, 1980, Ser. No. 184,365
Int. Cl.³ G01K 7/04
U.S. Cl. 374—134 21 Claims



1. A temperature measuring system comprising thermoelectric sensing means having opposed junctions, said sensing means being adapted to generate an open circuit output voltage dependent on the temperature difference, hence heat flow, between said junctions, means for supplying heat to or extracting heat from said sensing means at a predetermined rate through one of said junctions, means for measuring the open circuit output voltage of said sensing means and means for relating the measured open circuit output voltage of said sensing means to said predetermined rate of heat supply or heat extraction for determining the temperature of said other of said junctions.

9. A method of measuring temperature comprising the following steps:

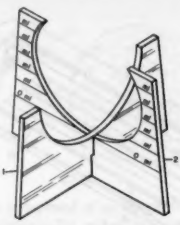
providing thermoelectric sensing means having opposed junctions, said sensing means being adapted to generate an open circuit output voltage dependent on heat flow through said sensing means between said junctions, exposing one of said junctions to a temperature to be measured while supplying heat to or extracting heat from said sensing means at a predetermined rate through the other of said junctions, measuring the open circuit output voltage of said sensing means and relating the measured voltage to said predetermined rate of heat supply or heat extraction to determine the temperature of said one of said junctions.

4,358,958
ATTACHABLE, LEVEL-CORRECTING VOLUMETER AND STAND FOR ROUND BOTTOM FLASKS

Charles C. Wehrenberg, 72 Kissling St., San Francisco, Calif. 94103

Filed Sep. 29, 1980, Ser. No. 191,708
Int. Cl.³ G01F 19/00
U.S. Cl. 73—428 3 Claims

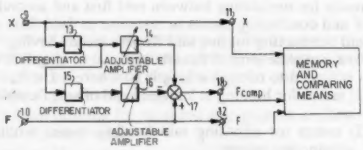
1. A knockdown holder for a receptacle comprising: at least two planar parts of stiff but elastically deformable material, each formed with a first edge for supporting the holder on a planar surface at substantially right angles thereto and a second edge opposite the first edge configured to engage the outer surface of the receptacle, each of the parts being provided with a means to engage a corresponding means of another part which when assembled form a three dimensional support, at least one of said parts being provided with indicia corresponding to predetermined volumes of liquid in the supported receptacle.



4,358,959
METHOD AND DEVICE FOR MEASURING THE PARAMETERS OF A DAMPED, SPRING-SUPPORTED MASS

Wilhelmus J. Lam, Haarlem, and Luitzen De Vries, Amstelveen, both of Netherlands, assignors to Fokker-VFW B.V., Schiphol-oost, Netherlands

Filed Apr. 14, 1980, Ser. No. 140,061
Claims priority, application Netherlands, Jan. 23, 1980, 8000442
Int. Cl.³ G01M 5/00
U.S. Cl. 73—432 R 9 Claims



1. In a method of measuring the rigidity, the damping coefficient and the inertia of a system comprising a damped, spring-supported mass of the type wherein the measurement of the rigidity takes place by determining the relationship between the force exerted on the mass and the deviation of the mass from the state of equilibrium at a speed and an acceleration of substantially zero value and storing said relationship, the improvement comprising the steps of:

(1) forming three electric signals—namely:

(a) a force signal having a value directly proportional to the force exerted on the mass,

(b) an acceleration signal having a value directly proportional to the acceleration of the mass, and

(c) a velocity signal having a value directly proportional to the speed of the mass;

(2) moving said mass in a manner such that it attains an acceleration and a velocity having values differing from substantially zero; and

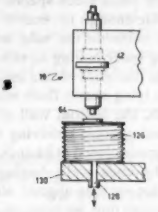
(3) adjusting the amplitudes of the acceleration signal and the velocity signal such that by subtracting these two signals from the force signal substantially the same relationship to the deflection is obtained as in measuring the rigidity.

4,358,960

DIFFERENTIAL FIBER OPTIC PROXIMITY SENSOR

John H. Porter, Colchester Point, Vt., assignor to Ladd Research Industries, Inc., Burlington, Vt.

Continuation-in-part of Ser. No. 36,246, May 4, 1979, Pat. No. 4,210,029. This application Jun. 26, 1980, Ser. No. 163,157
The portion of the term of this patent subsequent to Jul. 1, 1997, has been disclaimed.
Int. Cl.³ G01B 11/14; G01L 9/00
U.S. Cl. 73—705 27 Claims



1. A sensor for use in apparatus capable of translating the relative intensity of transmitted reflected light into signals indicative of the distance between the sensor and the reflective surface of a body which comprises

means for directing light at said surface from a point source;

a pair of output light guides arranged with their light receiving ends facing said surface to receive and transmit the light reflected by said surface;

the light receiving end of one of said guides, when said sensor is in operative position, being closer to said surface than the other;

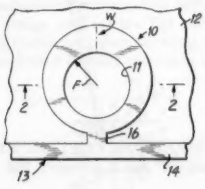
whereby the intensities of reflected light received and transmitted by said guides will be equal so as to indicate a null when said body is located a predetermined distance from said light receiving ends and will vary differentially as a function of change of distance between said body and said ends.

4,358,961

METHODS AND APPARATUS FOR TESTING RUPTURE STRENGTH OF TUBULAR PARTS

William L. Woods, Jr., Keithville, La., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Jan. 5, 1981, Ser. No. 222,428
Int. Cl.³ G01N 3/08
U.S. Cl. 73—827 11 Claims



1. A method of testing the rupture strength of a tubular part comprising a molded plastic cylindrical tube having a weld line extending radially across the wall of the tube at one point along the circumference thereof and extending the length of the tube, the tube being subject to radial expansion with respect to the longitudinal bore of the tube and having a tendency to rupture along the weld line when the tube is subsequently assembled with an insert member that is force fit into the bore of the tube, which method comprises:

(a) placing an expansible tubular collet in the bore;

(b) forcing an expanding member a predetermined distance into the collet so that the member expands the collet and the collet expands the walls of the part radially outward by a predetermined amount; and

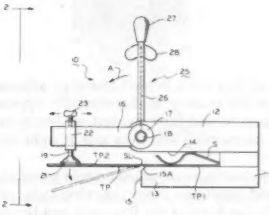
(c) measuring the peak force required to so expand the collet to provide an indication of the rupture strength of the tube, the peak force reading providing an indication of the weld strength of the tube and, where the weld does not rupture during the forcing step, an indication of the likelihood that the tube will fail prematurely in the field after subsequent assembly of the tube with the insert member.

4,358,962

SCORE LINE FOLDING TESTER

C. William Ashby, Naperville, and Stephen A. Morse, Downers Grove, both of Ill., assignors to Container Corporation of America, Chicago, Ill.

Filed Apr. 27, 1981, Ser. No. 257,536
Int. Cl.³ G01N 3/20
U.S. Cl. 73—849 3 Claims



1. An apparatus for measuring the force necessary for the folding of paperboard about a score line therein comprising:

(a) a fixture for holding a paperboard test piece having a score line thereon;

(b) said fixture having upper and lower spaced apart limbs defining a slot therebetween for entrance thereinto of a portion of said test piece;

(c) the score line of said test piece lying along an axis coincident with an edge of said lower limb at the entrance to said slot;

(d) a force applying arm pivoted to said upper limb and having force applying means supported thereby in contact with that portion of the test piece extending beyond said slot;

(e) means for measuring a torque related to the force necessary to cause folding of the test piece at said score line; and

(f) said measuring means being mounted upon a shaft fixed to said force applying arm and rotatable with respect to said upper spaced apart limb.

4,358,963

UNITARY ELECTROMAGNETIC FLOWMETER WITH SEALED COILS

Roy F. Schmoock, Yardley, Pa., assignor to Fischer & Porter Company, Warminster, Pa.

Continuation-in-part of Ser. No. 75,037, Sep. 12, 1979, Pat. No. 4,253,340, which is a continuation-in-part of Ser. No. 811,276, Jun. 29, 1977, Pat. No. 4,181,018, which is a division of Ser. No. 771,420, Feb. 23, 1977, Pat. No. 4,098,118. This application Aug. 1, 1980, Ser. No. 174,609
Int. Cl.³ G01F 1/58
U.S. Cl. 73—861.12 7 Claims

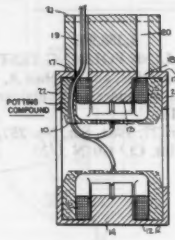
1. An electromagnetic flowmeter unit interposable between the flanged ends of upstream and downstream pipes in a line carrying a fluid whose flow rate is to be measured, the flanged ends being bridged by bolts which encage the unit and subject

it to a compressive force to effect a fluid seal, said unit comprising:

A. a non-magnetic metal spool having end flanges to provide a flow conduit having a longitudinal flow axis, said spool having a strength sufficient to withstand the pressure of the fluid and said compressive force;

B. an insulating inner liner for said spool;

C. a cylindrical housing formed of ferromagnetic material surrounding said spool and concentric therewith, said housing having end plates mating with the flanges of the spool to create an annular inner chamber between the spool and the housing;



D. a pair of thin coils in said chamber adjacent the inner surface of the housing at diametrically opposed positions with respect to said flow conduit, said coils surrounding a coil axis intersecting said flow axis at right angles thereto; and

E. a pair of electrodes mounted on said spool at diametrically-opposed positions along an electrode axis which is perpendicular both to the flow axis and the coil axis, said inner chamber being filled with a potting compound to seal said coils and said electrodes therein.

4,358,964

ELECTROMAGNETIC FLOWMETER

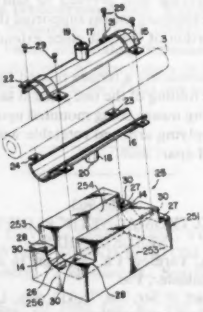
Koichi Otsuka, Yokohama, Japan, assignor to Otsuka Kogyo Co., Ltd., Kanagawa, Japan

Filed Jun. 25, 1980, Ser. No. 162,998

Claims priority, application Japan, Jun. 30, 1979, 54-82815

Int. Cl.³ G01F *1/58*

U.S. Cl. 73—861.13 **5 Claims**



1. An electromagnetic flowmeter for attachment to a conduit intermediate the ends of the conduit, comprising:

a magnetic field generating device comprising a U-shaped iron core having legs with free ends and means spacing said free ends by a conduit receiving gap and a coil means thereon energizable for producing a magnetic field across the gap between the free ends of the legs of the U-shaped iron core; and

a substantially diametrally opposed pair of electrodes disposed in said gap and having means for entering a conduit along a line substantially at right angles to the magnetic field across said gap;

output means connected to said electrodes for providing a flowmeter output; and

wherein the improvement comprises:

a boxlike body of molded resin or the like having a bottom wall, end walls and side walls with said iron core and coil means encapsulated in said resin in the bottom wall and side walls at the central portion of said body, said side walls having inner faces spaced by a conduit receiving space wide enough to receive a conduit removably but snugly between the side walls thereof, said conduit receiving space having an axis along which said body extends, the free ends of said legs of said iron core having free ends lying nearly flush with the inner faces of said side walls, the bottom wall of said body being spaced below said conduit receiving space by an electrode receiving space closed at its ends by said end walls of said body, the ends walls having means defining upward facing depressions aligned along said axis for receiving and supporting portions of a conduit axially spaced on each side of said electrodes;

means cooperative with said end walls for fixedly clamping a conduit in said body, the top of said boxlike body being open from said conduit receiving space, said boxlike body being orientable about said conduit receiving space axis so that the top of said boxlike body opens up, down or sidewardly as desired, said side walls of said body extending in height beyond said conduit receiving space sufficiently to flank both of said electrodes therebetween, the tops of said end walls lying below the tops of said side walls and being substantially coplanar with a diametral plane of said conduit receiving space, said clamping means comprising a clamping member placed across said conduit receiving space and fixed across atop each said end wall for clamping a conduit in said depressions, said bottom wall being spaced below the bottoms of said depressions in said end walls.

4,358,965

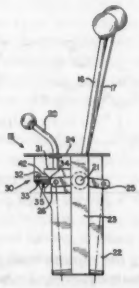
TRANSMISSION NEUTRAL LEVER LOCK

William L. Schroeder, Buffalo Grove, Ill., assignor to International Harvester Co., Chicago, Ill.

Filed Dec. 18, 1980, Ser. No. 217,634

Int. Cl.³ G05G *5/10*

U.S. Cl. 74—475 **3 Claims**



1. In a tractor loader vehicle, a housing having a slotted cover plate; at least two transmission control levers journally mounted on a horizontal shaft supported within said housing, said levers extending upwardly through said slotted cover plate, one of said levers controlling forward and rearward direction of travel of said vehicle and the other controlling the

gear speed range; a slotted cam means mounted on the direction control lever; a panel lock means mounted within said housing and having a latch swingable about a vertical axis between the first disengaged position and a second position engaging said slotted cam means to lock the position of said direction control lever in a central neutral position and detent means associated with said latch for maintaining said latch in said second position; and a neutral locking lever having a vertical shaft portion disposed on the axis of rotation of said latch and drivingly coupled therewith to rotate said latch, said vertical shaft portion extending through an aperture in said housing cover plate to an integral radially extending hand lever portion having a length providing sufficient mechanical advantage for an operator to overcome said detent means and accomplish shifting of said latch between said first and second positions.

4,358,966

METHOD OF MAKING A CIRCULAR WEDGE FOR USE AS AN ADJUSTING ELEMENT IN A PRINTING PRESS OR THE LIKE

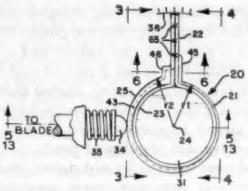
Erich Pietsch, Offenbach-Bieber, Fed. Rep. of Germany, assignor to M.A.N.-Roland Druckmaschinen Aktiengesellschaft, Fed. Rep. of Germany

Filed Sep. 12, 1980, Ser. No. 186,648

Claims priority, application Fed. Rep. of Germany, Sep. 17, 1979, 7926349[U]

Int. Cl.³ B23K *31/02*; B23P *15/00*

U.S. Cl. 74—567 **3 Claims**



1. The method of making a circular wedge for use as an adjusting element in a printing press or the like which comprises deforming a flat strip of metal by embossment to form a blank having a base side and a longitudinally extending tapering bead presenting a linear wedge surface, with the bead stopping short of the ends of the strip to define flat end portions, bending the end portions sharply away from the base side of the blank at an angle of 90 degrees, wrapping the blank about a cylindrical mandrel so that (a) the base side of the blank is formed into a cylindrical inner wall, (b) the presented surface of the bead becomes a spiral outer wall to define, with the inner wall, a circular wedge, and (c) the flat end portions are in face-to-face engagement, and then securing the end portions rigidly together to form a radially extending arm on the circular wedge.

4,358,967

FOOT OPERATED CRANK ASSEMBLY

B. Linn Kastan, 624 Primrose Lane, Thousand Oaks, Calif. 91360

Filed Jun. 23, 1980, Ser. No. 161,909

Int. Cl.³ G05G *1/14*

U.S. Cl. 74—594.2 **3 Claims**

1. A foot operated crank assembly for transmitting power to a bicycle comprising:

a hub housing adapted to be fixedly secured to the frame of a bicycle, sand hub housing having an inner end and an outer end;

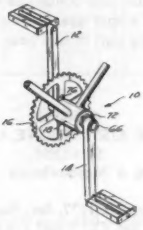
a shaft assembly having a first longitudinal center axis, said shaft assembly extending through said hub housing and exteriorly of both said inner end and said outer end, said shaft assembly being supported for low frictional rotation in respect to said hub housing, the axis of rotation of said shaft assembly coinciding with said first longitudinal center axis;

a collar secured in a predetermined position upon said shaft assembly, said collar having an outer face, said outer face being located exteriorly of said inner end;

a sprocket wheel mounted on said shaft assembly against said outer face of said collar, said sprocket wheel being adapted to connect with a chain, said sprocket wheel being fixed relative to said shaft assembly;

a first tubular crank arm being fixed to said shaft assembly directly adjacent said inner end, a second tubular crank arm being fixed to said shaft assembly directly adjacent said outer end;

said shaft assembly having first and second screw thread



sections formed on the exterior surface of said shaft assembly, the diameter of said first screw thread section being larger than the diameter of said second screw thread section, a shoulder secured to said shaft assembly at the end of said shaft assembly directly connecting with said first screw thread section, said shoulder being of a larger diameter than said diameter of said first screw thread section, said collar to be located about said shaft assembly and then slid by said second screw thread section to engage with said first screw thread section, at complete engagement of said collar with said first said screw thread section, said collar abuts said shoulder; and

wherein said shaft assembly comprises a cylindrically shaped shaft upon which is located a sleeve having a length less than said shaft, said sleeve being secured to said shaft by securing means, said first and second screw thread sections being formed on said sleeve.

4,358,968

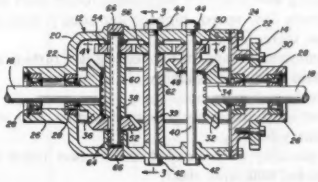
POWER TRANSFER DEVICE IDLER GEAR

Bernard J. Miller, R.D. #1, Box 133, West Alexander, Pa. 15376

Filed Jan. 29, 1980, Ser. No. 117,645

Int. Cl.³ F16H *1/40*

U.S. Cl. 74—713 **8 Claims**



1. A power transfer device comprising a gear box, means on the gear box for driving connection with a power source to rotate the gear box about an axis of rotation, a stationary shaft extending into and rotatably supporting the gear box and defin-

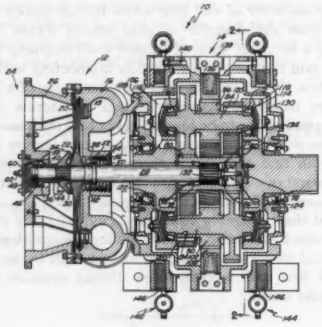
ing its axis of rotation, an output shaft extending into and journaled from the gear box for rotation about the same axis as the gear box, and gear means including spur gears and bevel gears interposed between the stationary shaft, gear box and output shaft to drive the output shaft at a predetermined ratio with respect to the gear box, said stationary and output shafts being in axial alignment with the inner ends spaced apart within the gear box, said gear means including a stationary bevel gear on the inner end of the stationary shaft and a driven bevel gear on the inner end of the output shaft, three shafts extending transversely of the gear box in perpendicular relation to the axis of rotation thereof, a bevel gear and spur gear on each of the outermost of said parallel shafts, the bevel gear on one of the parallel shafts being meshed with the bevel gear on the stationary shaft, the bevel gear on the other of the parallel shafts being meshed with the bevel gear on the output shaft, said bevel gears on the parallel shafts being laterally spaced from each other and connected with the spur gear on the same shaft, and a spur gear on the intermediate of said parallel shafts forming part of said gear means.

4,358,969

HIGH PRESSURE AIR TURBINE AND GEAR TRAIN SYSTEM

Giovanni J. Silvestri, 4 Meadowbrook Dr., Barrington, R.I. 02806

Filed May 18, 1977, Ser. No. 798,064
Int. Cl.³ F16H *3/44*
U.S. Cl. 74—785 **6 Claims**



1. An air turbine and gear train system comprising:

a turbine assembly, adapted to receive relatively high pressure air, for converting said relatively high pressure air to relatively high speed rotary shaft motion output;

a gear train assembly, for receiving said relatively high speed rotary shaft motion output from said turbine assembly and reducing said relatively high speed rotary shaft motion to relatively low speed, high power rotary motion as the output thereof; and

interconnecting means for connecting said turbine assembly and said gear train assembly;

a relatively stationary housing;

an input shaft, rotatably mounted within said relatively stationary housing;

a first plurality of preloaded anti-friction roller bearings supported said input shaft;

a turbine wheel, centrally mounted on said input shaft whereby said relatively high pressure air imparts motion to said turbine wheel thereby producing torque; and

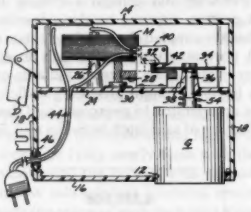
means for transferring said torque from said turbine wheel to said input shaft.

4,358,970

POWER DRIVEN BOTTLE CAP REMOVER

Don Jacobson, 799 W. Robin, Placentia, Calif. 92670

Filed Feb. 17, 1981, Ser. No. 234,638
Int. Cl.³ B67B *7/16, 7/18*
U.S. Cl. 81—3.2 **7 Claims**



1. A power driven device for twisting a crown cap loose from a circular head of a neck of a bottle on which said cap is crimped and then separating said cap from said head, said device including:

a. a rotational power generating assembly that includes support means, an electric motor mounted on said support means, a driven shaft; a bearing mounted on said support means that rotatably and slidably supports said driven shaft; a plurality of speed reducing gears rotatably supported from said support means and driven by said motor, with a first of said gears being elongate and rotating on an axis parallel to said shaft; electric circuit means for supplying electric power to said motor; and a normally open electric switch that forms a part of said electric circuit, said switch including a spring loaded member that when moved from a first position to a second position closes said electric circuit to energize said electric motor for the latter to drive said plurality of gears;

b. a second gear secured to said driven shaft that engages said first gear and may move longitudinally relative thereto, said second gear when said driven shaft moved longitudinally from a first to a second position causing said second gear to pressure contact said spring loaded member and move the same to said second position;

c. an inverted cup shaped head that includes a top and a cylindrical sidewall that extends outwardly therefrom, said top secured to an end of said driven shaft opposite from the end thereof that supports said second gear, said head including a tubular centered boss that extends outwardly from said top within said boss having a closed end adjacent said top, and said head having an open end through which said cap and neck may be moved towards said top;

d. first spring means that at all times tends to maintain said head in a first position in which said second gear and said switch actuating members are in said first positions;

e. a rod slidably mounted in said boss and extending outwardly therefrom;

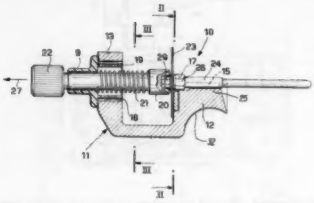
f. second spring means that at all times tend to maintain said rod in a first position in which it is spaced from said closed end of said boss, but said rod capable of being moved to a second position to pressure contact said closed end to move said head in a direction to dispose said second gear and actuating member to said second positions; and

g. cap engaging means that grip said cap when the latter is moved towards said top to a degree that it pressure contacts said rod to move said rod to said second position, with said head and cap engaging means being rotated to twist said cap from said head, and said rod as said bottle is thereafter moved away from said head moving from said second to said first position to force said cap that has been removed outwardly from said cap engaging means.

4,358,971
DENTIST'S DRILL CHUCK

Osvaldo Favonio, Via per Bellusco 17, Ornago (Milan), Italy

Filed Nov. 12, 1980, Ser. No. 206,381
Claims priority, application Italy, Nov. 13, 1979, 23110/79[U]
Int. Cl.³ B25B *17/00*
U.S. Cl. 81—55 1 Claim



1. In a combination of a chuck of the kind having a tapped end section to which a dentistry drill tool is to be fastened by a screw and a utensil for screwing said screw into said tapped end section, the improvement comprising:

said tapped section of said chuck terminated by an external polygonal head adapted to be engaged stably by a complementary seat of said utensil;

said screw having a polygonal head;

said utensil having a pipe wrench section and a substantially U-shaped supporting member defining opposed prongs between which there extends said pipe wrench section rotatable and axially translatable against the bias of a spring, said wrench section being borne by a selected prong of said supporting member whereas the opposite prong has a seat coaxial with the wrench section within which seat the chuck can be engaged, said screw having a polygonal head matching the wrench section, a drill tool being fastened to said chuck by said polygonal head screw by means of operation of the pipe wrench section, the drill tool being thus clamped between the wrench section and the prong of the supporting member;

said selected prong having a bore formed therethrough and a bushing mounted in said bore, said bushing having an overhanging portion in which said wrench section is mounted, the wrench section extending beyond said overhanging portion by a knob opposite to the wrench section chamber;

said seat of said opposite prong formed on a resting plane thereof, said resting plane having a gutter-like shape and terminating with a U-section placed between a couple of confronting shoulders, said U-section and said shoulders engaging the polygonal head of the drill tool chuck; and

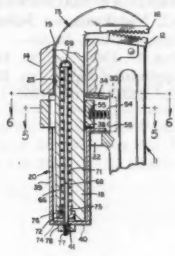
said opposite prong having a planar abutting surface disposed apart from said seat and exterior of said prongs, said planar abutting surface provided as a support to maintain planar alignment of said chuck with said screw and said wrench section.

4,358,972
SELF ADJUSTING WRENCH

James L. Tuell, Norcross, Ga., assignor to Tuell Industries, Inc., Atlanta, Ga.

Filed Nov. 10, 1980, Ser. No. 205,200
Int. Cl.³ B25B *13/14*
U.S. Cl. 81—145 6 Claims

1. A pipe wrench comprising an elongated wrench handle with a jaw fixed to one end thereof, a yoke mounted on said handle adjacent said one end and defining an opening therethrough extending parallel to said handle, said handle including retaining means spaced from said yoke, a movable jaw including a jaw element and an elongated leg member, said leg member being sized and shaped to slide along its length through the opening of said yoke, a housing for receiving the leg member of said movable jaw, said housing including an enlarged head portion and a stem portion, said head portion being sized and shaped for mounting in operative juxtaposition with said handle between said yoke and said retaining means and defining a first lock opening facing said handle and a second lock opening aligned with said first lock opening and facing away from said handle when said housing is in operative juxtaposition with said handle, the head portion of said housing also defining a movable jaw leg opening in alignment with said yoke opening when said head portion is mounted in operative juxtaposition with said handle, the stem portion of said housing being aligned with said movable jaw leg opening of the enlarged head portion of said housing, a lock element positioned

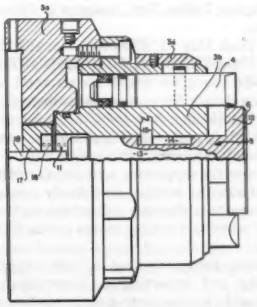


in the enlarged head portion of said housing, said lock element including a locking surface facing the leg member of said movable jaw and first spring means biasing said locking surface toward engagement with the leg member of said movable jaw, said elongated leg member of the movable jaw defining a bore aligned with the length of said elongated leg and opening through the end of said leg, a coil compression spring positioned in said bore, a spring rod extending longitudinally through said spring and engaged at one of its ends with said spring and projecting at its other end out of said bore and connected at its other end to the stem portion of said housing, whereby the jaw element of said movable jaw is biased toward said fixed jaw.

4,358,973
WORK CLAMPING FIXTURE

Dragoljub Rozman, Stuttgart, Fed. Rep. of Germany, assignor to Sandvik Kosta G.m.b.H., Renningen, Fed. Rep. of Germany

Filed Jul. 5, 1979, Ser. No. 54,698
Claims priority, application Fed. Rep. of Germany, Jul. 12, 1978, 2830550
Int. Cl.³ B23B *33/00*
U.S. Cl. 82—40 R 5 Claims



1. An end face driver for the transmission of torque from a

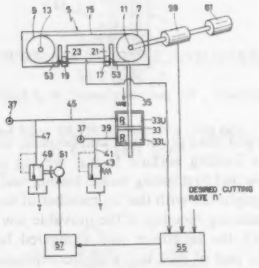
spindle to a workpiece in a rotary machine tool such as a lathe or the like, comprising a rotatable body having a plurality of pins arranged in an annular array extending axially from the front end thereof, said pins being axially movable relative to said body and to each other and resiliently biased by a common hydraulic cushion, a face plate mounted on said body within the annular array of pins for axial movement relative to said pins and body, and means independent of said hydraulic cushion, to resiliently bias said face plate axially outward from said body for engagement with said workpiece.

4,358,974

METHOD AND APPARATUS FOR CONTROLLING THE FEEDING OF A BANDSAW BLADE OF HORIZONTAL BANDSAW MACHINES

Nobuo Sakurai, 14-2, Nishikanagawa 3-chome, Kanagawa-ku, Yokohama-shi, Kanagawa-ken, Japan

Filed Jun. 17, 1980, Ser. No. 160,223
Claims priority, application Japan, Jun. 18, 1979, 54/75604
Int. Cl.³ B23D *53/00*; G06F *15/46*
U.S. Cl. 83—13 **4 Claims**



3. An apparatus for controlling the feeding amount of a horizontal band saw blade so as to obtain a constant optimum cutting rate, said apparatus comprising:

detecting means for detecting a change in the amount of transversal and normal components of the band saw blade which correspond to the abrasion of the blade;

a computing process unit for generating signals defining the amount of the desirable cutting resistance from said detected transversal and normal components and a constant optimum cutting rate; and

pressure controlling means for controlling the cutting resistance in response to said signals generated by said computing process unit.

4,358,975

ROTARY CHISEL CUTTER

Bobby L. Higgins, Dallas, Tex., assignor to Camsco, Inc., Richardson, Tex.

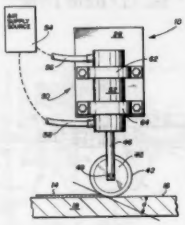
Filed May 23, 1980, Ser. No. 152,776
Int. Cl.³ D06H *7/00*; B26D *1/06*
U.S. Cl. 83—56 **4 Claims**

1. A cutting device for cutting sheet material cut on a support surface comprising:

a circular cutting tool including means for cutting extending along the circumference thereof;

support means for supporting said circular cutting tool, such that said circular cutting tool freely rotates within said support means to thereby roll on the surface of the sheet material when said cutting means contacts the sheet material; and

impact means interconnected to said support means for generating and imparting an intermittent high impact force to said circular cutting tool in a direction normal to the axis of rotation of said circular cutting tool for moving said cutting means into intermittent cutting engagement with the sheet material such that said cutting means periodically impacts the sheet material support surface to thereby cut the sheet material with a minimal vertical



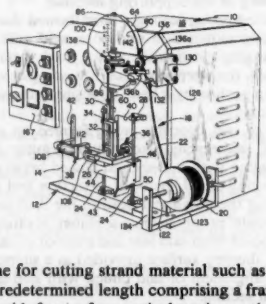
displacement of said circular cutting tool to substantially minimize heat generation in the sheet material during the cutting operation.

4,358,976

CHAIN CUTTING MACHINE

Steven R. Alviti, Narragansett, R.I., assignor to Bel Air Tool Corp., Warwick, R.I.

Filed Jan. 26, 1981, Ser. No. 228,689
Int. Cl.³ B26D *7/00*
U.S. Cl. 83—66 **9 Claims**



1. A machine for cutting strand material such as chain to a variable and predetermined length comprising a frame, a plate mounted on said frame for vertical reciprocation relative thereto between upper and lower positions, an open ended tube mounted on said plate and adapted to receive chain from a chain supply assembly adapted to supply chain to the open upper end of said tube, chain pulling means mounted on said plate and adapted to grip chain emerging from the bottom end of said tube when said plate is at said upper position thereof so as to pull a selected length of said chain through said tube during the downward travel of said plate and to release said chain at the lower position of said plate, a chain cutting assembly supported by said frame and adapted to move in conjunction with said plate and adapted to sever a predetermined length of said chain from the supply thereof, and means for varying the reciprocal travel of said plate relative to said frame so as to vary the length of chain pulled from said supply on each reciprocal cycle thereof.

4,358,977

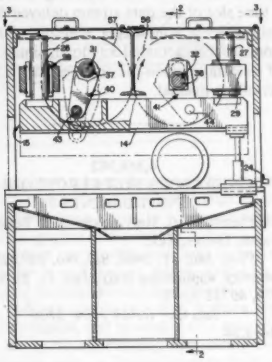
CUTOFF PRESS

John R. Brandli, St. Charles, Ill., assignor to Turek & Heller Machine, Inc., Addison, Ill.

Continuation of Ser. No. 127,640, Mar. 6, 1980, abandoned. This application Sep. 4, 1981, Ser. No. 299,649

Int. Cl.³ B23D *21/00, 25/04;* **B26D** *1/60, 3/16*

U.S. Cl. 83—319 **12 Claims**



1. In a cutoff press for cutting tube traveling along a horizontal path, a frame having a bed portion and a head portion between which the tube travels, a cutoff die set having a lower die and an upper die, stationary slide rails mounted on the bed portion to slidably support the lower die, a ram having slide rails for slidably supporting the upper die of the die set, and means for driving the ram through a cutoff cycle of a downward cutting stroke and an upward return stroke comprising, means mounting the ram for vertical movement only, a pair of horizontally spaced apart crankshafts rotatably supported by the head portion, means driving the crankshafts in opposite directions during a cutoff cycle, said crankshafts having cranks the centers of which are eccentric to the axes of crankshaft rotation, connecting rods connected at their upper ends to the cranks and at their lower ends to spaced apart wrist pins carried by said ram, and said wrist pin centers being spaced laterally from a plane extending vertically from the axes of crankshaft rotation, said laterally spaced wrist pins functioning to commence the downward acceleration of said ram prior to said crank reaching top-dead-center of said crank rotation and to direct the entire force acting on said connecting rods substantially downwardly during said cutoff cycle thereby minimizing lateral ram instability.

4,358,978

TRIMMING STRIP MATERIAL

Kenneth T. Lawson, Middlesbrough, England, assignor to The Head Wrightson Machine Co. Ltd., Middlesbrough, England

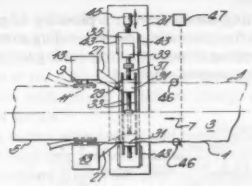
Filed Jun. 17, 1980, Ser. No. 160,280

Claims priority, application United Kingdom, Jun. 26, 1979, 7922196

Int. Cl.³ B26D *5/00*

U.S. Cl. 83—364 **16 Claims**

1. Apparatus for trimming the edges of strip material including at least one knife mounted for rotation about a generally horizontal axis, pivot means displaced from said knife and pivotally supporting said knife about a generally vertical axis, means to determine the deviation of said strip in a transverse direction from its normal line of advance, and means to move said pivot means transversely of the strip to compensate for deviation of said strip, the displacement of said pivot means from the knife being in such direction that when said pivot means is moved transversely, the knife will steer itself across



the strip to a new position during relative movement between the strip and the knife.

4,358,979

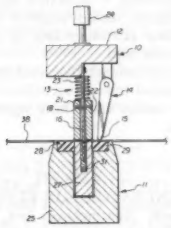
APPARATUS FOR CUTTING PLASTIC FILM

Werner Kurzbuch, Baton Rouge, La., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Nov. 24, 1980, Ser. No. 210,075

Int. Cl.³ B26D *7/20;* **B26F** *1/18*

U.S. Cl. 83—658 **11 Claims**



1. Apparatus for perforating plastic film which comprises:

a metal blade having an elongate serrated cutting edge;

means for reciprocating the blade through a cutting cycle;

a readily penetrable back-up member aligned with cutting blade and having a surface for supporting film thereon and grooves formed therein particularly shaped to receive the serrated cutting edge in close conformity, said grooves being formed by reciprocating said blade through a sufficient number of cycles to permanently shape the grooves in said back-up member by penetration of said blade to a substantial depth;

whereby reciprocation of said blade through a cutting cycle causes the blade to penetrate film supported on said support surface, to enter said particularly shaped grooves, and to return to a retracted position.

4,358,980

ELECTRONIC MUSICAL INSTRUMENT

Akio Imamura, Hamamatsu, Japan, assignor to Nippon Gakki Seizo K.K., Shizuoka, Japan

Filed Apr. 14, 1980, Ser. No. 139,685

Claims priority, application Japan, Apr. 19, 1979, 54-48278

Int. Cl.³ G10H *1/14, 5/00*

U.S. Cl. 84—1.19 **13 Claims**

1. An electronic musical instrument capable of presetting data relative to a musical tone to be produced by an instrument comprising:

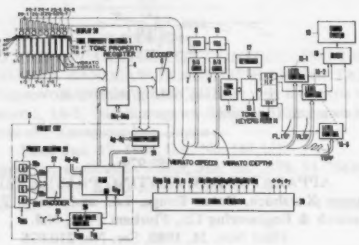
keyboard means having a plurality of keys;

mode selection means for manually selecting either one of a write mode and a read mode;

memory means for storing preset data corresponding to component elements of a musical tone prior to the write mode being selected by said mode selection means;

register means connected to said memory means for receiving and storing therein said preset data of said memory means when the read mode is selected by said mode selection means;

manual setting means having a plurality of manual setting elements for generating corresponding manual data, said manual setting elements corresponding to a respective one of said component elements;



detecting means for detecting the fact that one of said manual setting elements has been operated in the read mode and for generating a detection signal representing said fact, said register means adapted to replace said preset data with data corresponding to the operated manual setting elements; and

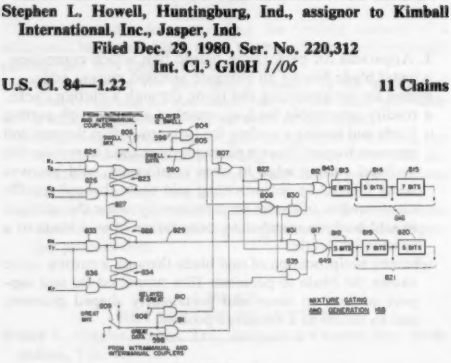
producing means connected to said register means for producing a musical tone in accordance with the content of said register means and a note signal sent from said keyboard means.

4,358,981

MIXTURE GENERATOR FOR ELECTRONIC ORGAN

Stephen L. Howell, Huntingburg, Ind., assignor to Kimball International, Inc., Jasper, Ind.

Filed Dec. 29, 1980, Ser. No. 220,312
Int. Cl.³ G10H *1/06*
U.S. Cl. 84—1.22 **11 Claims**



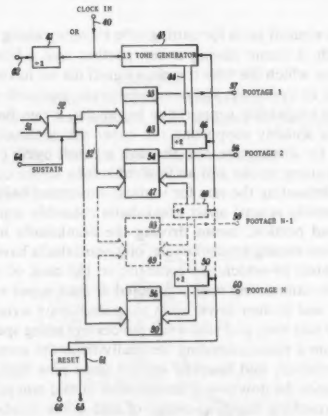
1. In an electronic organ comprising a manual having a plurality of playing keys wherein some of the keys are located in a first part of the manual and others of the keys are located in a second part of the manual; multiplex means for scanning said manual to produce a manual serial data stream comprising a plurality of time slots corresponding on a one-to-one basis to the keys of said manual and having a key actuated keydown signal in a time slot of an actuated key of the manual; demultiplex means having an input adapted to receive serial data, said demultiplex means demultiplexing the serial data on its input and keying tones corresponding to the serial data on its input; the improvement being a mixture generator interposed between said multiplex means and said demultiplex means comprising: a data input to which said data stream is connected; signal injection means responsive to the data stream for injecting a first keydown signal in a time slot of the data stream delayed from the key actuated keydown signal by an integer multiple of an octave and injecting a second keydown signal in a time slot of the data stream delayed from the time slot of said first signal by a non-integer multiple of an octave if the actuated key is located in the first part of the manual, and alternatively to injecting said first and second keydown signals, injecting a third keydown signal in the data stream in a time slot delayed from the key actuated keydown signal by a non-integer multiple of an octave and injecting a fourth keydown signal in a time slot of the data stream delayed from said third keydown signal by a non-integer multiple of an octave but delayed from the key actuated keydown signal by an integer multiple of an octave when the actuated key is located in the second part of the manual.

4,358,982

IN TONE GENERATORS FOR ELECTRONIC MUSICAL INSTRUMENTS

Massimo Di Pietro, Rieti, Italy, assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 31, 1980, Ser. No. 117,321
Claims priority, application Italy, Jan. 31, 1979, 47843 A/79; Jul. 13, 1979, 49755 A/79
Int. Cl.³ G10H *1/04, 5/06*
U.S. Cl. 84—1.24 **16 Claims**

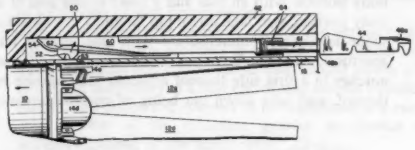


1. An electronic tone synthesizer comprising a plurality of octave inputs for receiving input signals corresponding at least to notes of an octave scale of a musical instrument; a plurality of groups of analog amplitude modulators, each group comprising a number of modulators equal in number to said plurality of octave inputs, each modulator in a group having a carrier input, a modulating input and an output; for each modulator group, means connecting the modulator outputs to a respective footage output for that modulator group; carrier generator means for producing an ordered frequency submultiple series of sets of tone signals, each set comprising a number of tone signals having harmonically related frequencies of a musical scale octave and corresponding in number to the number of amplitude modulator means in each said modulator group; means connecting said octave inputs to respective modulating inputs of corresponding modulators of each group and means for connecting each set of tone signals to the carrier inputs of corresponding modulators of an individual one of the modulator groups such that an input on any particular octave input produces at the footage outputs an amplitude modulated series of submultiple frequency tone signals.

4,358,983
BLAST ENABLED MISSILE DETENT/RELEASE MECHANISM

Ray D. Fallon, Thousand Oaks, and Richard D. Stubbs, Woodland Hills, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Dec. 26, 1978, Ser. No. 973,461
Int. Cl.³ F41F 3/04
U.S. Cl. 89—1.806 12 Claims



1. A blast actuated release/detent mechanism for a missle capable of producing a thrusting blast, comprising:

a lever moveable from a first to a second position for restrainingly engaging said missile;

a slidable member engageable with said lever for maintaining said lever in said second, missile-engaging position;

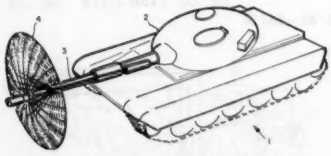
a blast-actuated member pivotably connected to said slidable member, and extendable to a first position into the blast path of said missile, and pivotable to a second position in response to the blast for sliding said sliding member from its engagement with, to disengagement from, said lever.

10. In a missile launcher having a support slidably supporting a rocket propelled missile, a movable restraining member releasably engaging said missile and restraining said missile against sliding movement along said support, and an arrangement for igniting the propellant of said rocket, the improvement comprising a movable spring-loaded sear engageable with said movable restraining member, said sear constituting means for maintaining said restraining member in restraining engagement with said missle; and a rocket blast-actuated toggle lever rotatably connected to said spring-loaded sear, said toggle lever having a first toggle position in the path of a gas blast from said rocket and having a second toggle position when subjected to the rocket gas blast in which said spring-loaded sear moves said restraining member for releasing said movable restraining member from said missile and thereby said missile from said support.

4,358,984
PROTECTIVE DEVICE FOR COMBAT VEHICLE WITH GUN BARREL

Nils Winblad, Karlskoga, Sweden, assignor to Aktiebolaget Bofors, Bofors, Sweden

Filed Jan. 4, 1980, Ser. No. 109,734
Claims priority, application Sweden, Jan. 12, 1979, 7900277
Int. Cl.³ F41H 7/02
U.S. Cl. 89—36 H 7 Claims



1. An extendable and retractable screen to be mounted on a gun barrel which extends beyond the armor of an armored combat vehicle, the screen and the armor thereby providing two distinct overlying layers of protection for the occupants of the combat vehicle, the screen igniting impact fused ammunition with shaped or hollow charge effects, said screen igniting said ammunition at a distance from the armor of the vehicle to provide dissipation of the charge before it reaches the armor, the armor of the vehicle then protecting the occupants of the vehicle from the dissipating charge, said retractable screen comprising:

(a) an enlarged protective screen surrounding a substantial portion of said gun barrel, said screen having a mesh spacing to provide a field of view therethrough for the occupants of the vehicle, said screen igniting impact fused ammunition with shaped or hollow charge effects which strike said screen,

(b) securing means mounted on said barrel, said means having a first fixed ring and second slidable ring, said first ring surrounding and fixably secured to said gun barrel, said second ring slidably mounted on said gun barrel,

(c) extendable and retractable support means for said protective screen, said support means including a plurality of circumferentially spaced rib members pivotably attached to said first fixed ring, said support means also including a plurality of circumferentially spaced spar members, each one of said spar members being pivotably mounted and extending from said second slidable ring to an intermediate portion of one of said support ribs,

operating means mounted on said gun barrel, said means including at least one hydraulic cylinder for selectively adjusting the slidable ring with respect to the fixed ring to thereby extend and retract the support means for the protective screen between a fully extended position wherein each rib extends outwardly from said gun barrel, and a fully retracted position wherein each rib extends substantially parallel to said gun barrel.

4,358,985
MAGNETIC HEADING REFERENCE SYSTEM AND GUN POSITION SYSTEM FOR MILITARY VEHICLES

Leslie A. Hamilton, 11423 Kirkwyn, Houston, Tex. 77089

Filed Jun. 5, 1980, Ser. No. 156,551
Int. Cl.³ F41G 5/14
U.S. Cl. 89—41 R 12 Claims

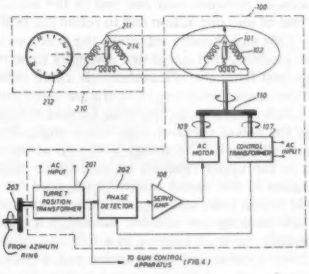


FIG. 4

11. A gun position indicator system for use in a vehicle having a body, a turret which is rotatable with respect to said body, the turret including a gun and means for positioning the gun in a given direction, said system comprising:

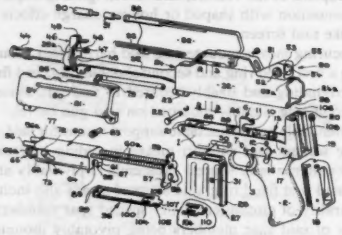
an indicator which is mounted inside the vehicle for displaying the direction of the gun with respect to magnetic north; and

a transmitter which is mounted on the turret so that substantially all of the magnetic signature of the vehicle is below the transmitter and which operates to produce gun control signals to the indicator when the vehicle assumes a new heading, which gun control signals cause the indicator to display the new direction of the gun with respect to magnetic north.

4,358,986
RIFLE BOLT ASSEMBLIES

Charles Giorgio, 48 Justin St., Smithfield, N.S.W, Australia

Filed Sep. 2, 1980, Ser. No. 183,163
Claims priority, application Australia, Sep. 11, 1979, PE0444
Int. Cl.³ F41D 5/04
U.S. Cl. 89—142 7 Claims



1. A rifle comprising a lower receiver and an elongated tubular upper receiver in operative overlying relationship; a barrel assembly mounted in and projecting from a first end of the upper receiver; a trigger and hammer assembly mounted in the lower receiver; an opening in the upper receiver to allow a firing pin striking hammer of the hammer assembly to project into the upper receiver; a bolt assembly comprising a bolt carrier, two parallel action rods demountably supported longitudinally in the upper receiver in a plane parallel to the plane occupied by the axis of the bore of the barrel assembly, bearing means in the bolt carrier slidably engaging the action rods, a bolt slidably and part rotatably mounted in the bolt carrier and projecting from one end thereof with the axis of sliding movement aligned with the axis of the bore of the barrel assembly and with a head lockable in a recess in said barrel assembly, a firing pin assembly axially slidably mounted in the bolt and projecting from the other end of the bolt carrier, an action plate interconnecting the ends of the action rods adjacent said other end of the bolt carrier, compression springs on the action rods interposed between said other end of the bolt carrier and the action plate; characterised by retaining means on one action rod located between said one end of the bolt carrier and the other end of said one action rod to retain the bolt carrier on the action rods and thereby integrate the bolt carrier and the action rods enabling that integrated assembly to be removed as a complete unit from the rifle, releasable catch means to lock the upper and lower receivers in operative overlying relationship, said catch means including a lug on said action plate and a recess in the lower receiver urged into engagement by the compression springs on the action rods, said action rods being supported in the upper receiver by said catch means and by support means in the barrel assembly engaged by said other ends of said action rods, said support means including a manually operable cocking rod slidably housed in a bearing in the barrel assembly, an axial bearing in a first end of the cocking rod to slidably receive said other action rod, a cocking handle on the cocking rod and biasing means to bias the cocking rod in a direction away from the bolt carrier.

4,358,987
SEMIAUTOMATIC HAND GUN HAVING AN ELONGATED TAKE DOWN PIN

Gary Wilhelm, Hamden, Conn., assignor to Llama Gabilondo y. Cia. S.A., Spain

Division of Ser. No. 951,967, Oct. 20, 1978, Pat. No. 4,275,640.
This application Jul. 31, 1980, Ser. No. 174,016
Int. Cl.³ F41C 5/06
U.S. Cl. 89—196 5 Claims

1. In a hand gun having a frame and a slide assembly movable on said frame, the slide assembly including the barrel of the gun and a camming lug, the frame having a pair of side walls which define a space therebetween, the slide assembly camming lug extending into the space between the frame side walls, an improved means for assembling the slide assembly to the frame and disassembling the slide assembly from the frame comprising:

a pair of aligned apertures in the frame side walls;

an aperture in the slide assembly camming lug, said slide assembly being movable on said frame to align said camming lug aperture with said frame apertures;

an elongated take down pin, said take down pin having a body portion with an axis and a head at one end of said body portion, said take down pin having a cross-sectional shape and area commensurate with said aligned frame apertures, said take down pin further being provided with notches in a first side thereof adjacent the opposite ends thereof, said take down pin being of constant cross-sectional area in the region between said notches, said take down pin being inserted in said aligned frame and slide assembly camming lug apertures to attach the slide assembly to the frame;

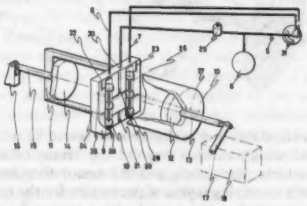
elongated lever means mounted on a first side wall of the frame for movement in a direction generally transverse to the said take down pin axis, said lever means being engagable with said take down pin notches whereby said lever means may engage a first take down pin notch to retain the pin in position and the slide assembly mounted on the frame and may engage the other of said take down pin notches to prevent unintended separation of said take down pin from the frame when the slide assembly is removed; and

means resiliently biasing said lever means toward said take down pin.

4,358,988
CONTROL ELEMENTS FOR GEARBOX RATIO SELECTORS IN HEAVY VEHICLES

Salvador Gali Mallofre, C/Valencia, 7 - escalera A, 7°-1ª, *Barcelona, Spain*

Filed Sep. 29, 1980, Ser. No. 192,024
Claims priority, application Spain, Feb. 13, 1980, 488,548
Int. Cl.³ F15B 11/18
U.S. Cl. 91—167 R 3 Claims



1. A pneumatic servo-mechanism for use in operating a

reduction gearing mechanism of a gearbox to change the speed ratio of the gearbox, in a heavy vehicle of the type including a gearshift lever for shifting gears of the gearbox and a clutch, said servo-mechanism comprising:

a distributor valve adapted to be mounted in a handle of the gearshift lever;

a source of compressed air;

a first piston-cylinder assembly including a first cylinder, a first piston movable in said first cylinder and a first piston rod connected to said first piston and extending outwardly of a first end of said first cylinder;

a second piston-cylinder assembly including a second cylinder, a second piston movable in said second cylinder and a second piston rod connected to said second piston and extending outwardly of a first end of said second cylinder, said second piston rod adapted to be connected to a movable member of the reduction gearing mechanism to achieve a change of the speed ratio;

said first and second piston-cylinder assemblies being coaxially aligned with second ends of said first and second cylinders confronting each other;

a valve housing positioned between and connected to said confronting second ends of said first and second cylinders;

first conduit means for supplying compressed air from said compressed air source directly to said valve housing and therethrough to said first and second cylinders, thereby to control relative movement between said first and second cylinders and said first and second pistons and piston rods, passage of compressed air through said first conduit means adapted to be initiated by engagement of the vehicle clutch;

said valve housing having therein control valve means mounted for movement for controlling the passage of said compressed air through said first conduit means and said valve housing to said first and second cylinders;

second conduit means, extending from said compressed air source, through said distributor valve to said valve housing, for, dependent on the position of said distributor valve, controlling the movement of said control valve means, thereby for controlling the passage of said compressed air through said first conduit means to said first and second cylinders, and thereby controlling the relative movement between said first and second cylinders and said first and second pistons and piston rods; and

said first and second cylinders and said valve housing comprising a floating assembly supported by and coaxially movable with respect to said first and second piston rods.

4,358,989

DEVICE FOR REDUCING PISTON VELOCITY IN A CYLINDER

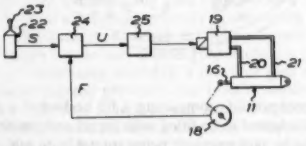
L. Östen Tordenmalm, Sandby, Sweden, assignor to Akermans Verstad AB, Sweden

Filed Jun. 17, 1980, Ser. No. 160,311

Claims priority, application Sweden, Jun. 20, 1979, 7905461

Int. Cl.³ F15B *13/16*; F01B *15/06*

U.S. Cl. 91—361 **5 Claims**



1. In piston and cylinder assemblies, a device for reducing the piston velocity as the piston approaches the end positions, comprising:

a cylinder,

a piston reciprocating in the cylinder and connected to a part to be driven by the piston and cylinder assembly,

a signal transmitter adapted to sense the position of said part,

a valve means for controlling a fluid supply to said cylinder,

an actuator means which is adapted to produce a positive or negative signal to lengthen and shorten, respectively the piston and cylinder assembly at a velocity dependent upon the position of setting of said actuator means, a control unit which is connected to said signal transmitter and said actuator means, said signal from said actuator means being applied to said control unit and compared therein with a signal from said position sensing signal transmitter such that if the positional signal has a value between a predetermined minimum value and a predetermined maximum value, said control unit emits a hydraulic fluid supply controlling signal to said valve means which is directly proportional to the setting of said actuator means, but if the positional signal has a value below or above said predetermined minimum or maximum values, respectively, said control unit emits a hydraulic fluid supply controlling signal which reduces the hydraulic fluid supply so as to become a directly linear function of the distances of the piston to its respective end position if the signal of said actuator means is negative and the positional signal has a value below the minimum value or if the actuator means signal is positive and the positional signal has a value above the maximum value, but which is directly proportional to the setting of the actuator means when the signal of the actuator means is negative and the positional signal has a value above the maximum value or it positive and the positional signal has a value below the minimum value.

4,358,990

NEGATIVE PRESSURE BOOSTER

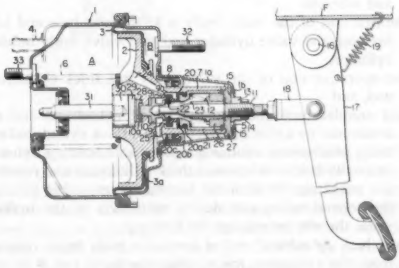
Hiroo Takeuchi, Ueda, Japan, assignor to Nissin Kogyo Kabushiki Kaisha, Ueda, Japan

Continuation of Ser. No. 11,707, Feb. 12, 1979, abandoned. This application Jan. 22, 1981, Ser. No. 227,411

Claims priority, application Japan, Aug. 31, 1978, 53-134925

Int. Cl.³ F15B *9/10, 15/24*

U.S. Cl. 91—376 R **3 Claims**



1. An improved negative pressure booster for use in an automatic braking system including a braking pedal moveable in a brake engaging direction and retracting direction, the negative pressure booster comprising:

a booster shell,

a booster piston within the booster shell dividing the shell into a first chamber which is connected to a negative pressure source and a second chamber alternately operative at the same negative pressure and atmospheric pressure,

an output rod connected to said booster piston in said first chamber,

an input rod connected to the braking pedal on the other side

of the booster piston from the output rod, the input rod engaging the booster piston for driving the output rod,

a first return spring in the first chamber biasing the booster piston in the direction of the input rod,

a valve cylinder connected to the booster piston on the side of the input rod and having an inner wall,

a resilient cylindrical valve body having a first end and an operative end, the valve body being mounted at the first end to the valve cylinder, the interior of the valve body and the valve cylinder being constantly open to atmospheric pressure,

a first annular valve seat on the booster piston facing the operative end of the valve body and cooperating therewith to intercept communication between the first and second chambers when the braking pedal is moved in the engaging direction,

a second annular valve seat disposed on a front end of the input rod facing the operative end of the valve body and cooperating therewith for intercepting communication between the second chamber and the interior of the valve cylinder at atmospheric pressure when the braking pedal is moved in the retracting direction,

a valve spring mounted in the valve body biasing the operative end towards the second annular valve seat,

a second return spring connected to the input rod biasing the input rod in the retracting direction of the braking pedal producing a retracting force pedal, wherein

when the braking pedal is retracted, a small first gap is present between the first valve seat and the operative end of the valve body and a second gap is closed between the second valve seat and the operative end of the valve body whereby vacuum is introduced from the first chamber to the second chamber; and

when the braking pedal is engaged, the second gap is present and the first gap is closed whereby atmospheric pressure is introduced into the second chamber from the interior of the valve cylinder and the booster is activated;

the improvement wherein the booster further comprises

a valve body holding cylinder fixed on the inner wall of the valve cylinder, and

stopper means adjustably attached to the input rod and engaging the booster shell for stopping movement of the input rod when the input rod reaches a normal retracted position, said stopper means being adapted to adjust the first gap when the input rod is at said retracted position; and wherein

the first end of the valve body is an annular base end held between the valve cylinder and said valve body holding cylinder,

the operative end of the valve body is a thick cylindrical end, and

said annular base end and said thick cylindrical end are connected by a thin flex portion, said thick cylindrical end being placed into abutment against said holding cylinder to axially buckle when said thick cylindrical end receives the retracting force of the second return spring through the second valve seat during retraction of the braking pedal thereby increasing the first gap,

said thick cylindrical end of the valve body being released from the retracting force when the input rod is in said retracted position thereby reducing the first gap to a normal amount which was increased during retraction of the braking pedal.

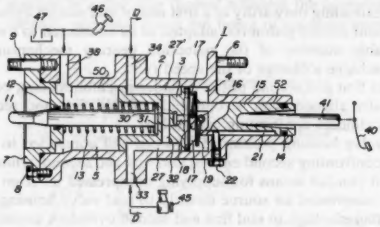
4,358,991

HYDRAULIC BOOSTER

Jun Udono, Higashiyamato, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jan. 16, 1980, Ser. No. 112,527
Claims priority, application Japan, Jan. 17, 1979, 54-4097
Int. Cl.³ F15B 9/10
U.S. Cl. 91—470 **4 Claims**

1. A hydraulic booster comprising a booster body having therein a stepped bore, an operating rod operated by an input member and slidably arranged in a first bore portion formed in said booster body, a power piston slidably arranged in a second bore portion formed in said booster body and defining a boost chamber, a rotating mechanism including elongate slots formed on one of the operating rod and the power piston, and a pin engaged in the slots and provided on the other of the operating rod and the power piston to produce relative rotation between the operating rod and the power piston corresponding to relative axial displacement therebetween, means to maintain the operating rod and the power piston in one of their extreme relative rotational positions, means to rotatively fix one of the operating rod and the power piston relative to the



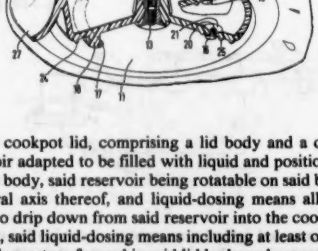
booster body, the other one of the operating rod and the power piston being a rotatable member, a throttle valve formed between the booster body and said rotatable member, said rotatable member being rotatable with respect to the booster body and, the throttle being operated in response to the rotation of said rotatable member, whereby when the input member is actuated to cause the rotation of said rotatable member relative to the booster body, the throttle valve is actuated to throttle hydraulic oil flow supplied thereto to produce upstream of the throttle valve a hydraulic pressure which is introduced into the boost chamber to hydraulically displace the power piston following the operating rod.

4,358,992

LID FOR COOKPOT

Roland Behnisch, Tübingen-Weilheim, Fed. Rep. of Germany, assignor to Braun & Kemmler GmbH & Co. KG, Reutlingen, Fed. Rep. of Germany

Filed Jul. 17, 1981, Ser. No. 284,449
Int. Cl.³ A47J 27/52
U.S. Cl. 99—345 **12 Claims**



1. A cookpot lid, comprising a lid body and a cup-shaped reservoir adapted to be filled with liquid and positioned above said lid body, said reservoir being rotatable on said body about a central axis thereof, and liquid-dosing means allowing the liquid to drip down from said reservoir into the cookpot when desired, said liquid-dosing means including at least one vertical through aperture formed in said lid body and spaced from said axis, and at least one vertical circular through hole of a predetermined diameter formed in said reservoir and spaced from

said axis the same distance as said aperture, said hole being vertically alignable with said aperture in a predetermined angular position of said reservoir to allow liquid in said reservoir to drip through said aperture and said hole into the cookpot.

4,358,993

APPARATUS FOR THERMALLY TREATING A LAYER OF MATERIAL

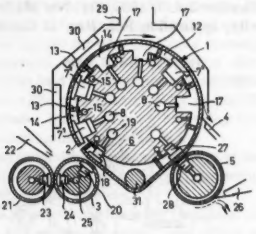
Werner Spillmann, deceased, late of Kilchberg, Switzerland; by Emilie Spillmann, heir, Kilchberg, Switzerland; by Irene Scheffre nee Spillmann, heir, Geneva, Switzerland; by Rolf Spillmann, heir, Pully, Switzerland, and Rolf Lehmann, Rudolfstetten, Switzerland, assignors to Escher Wyss Limited, Zurich, Switzerland

Filed Jul. 23, 1980, Ser. No. 171,289

Claims priority, application Switzerland, Jul. 25, 1979, 6878/79

Int. Cl.³ A23L *3/00, 3/26*

U.S. Cl. 99—483 **15 Claims**



1. Apparatus for thermally treating a layer of material in a plurality of successive, distinct phases comprising a treatment roller including a stationary carrier, and a shell mounted for rotation about the carrier; applying means for delivering a layer of material onto the outer surface of the shell; and a plurality of heat-conducting lines, equal in number to the number of said phases, incorporated in the carrier and extending in the direction of its axis, the lines being spaced circumferentially of the carrier in the direction of rotation of the shell, and each line comprising a feed duct for heat exchange medium, and directing means supplied by the associated feed duct and discharging said medium toward the inner surface of the shell, whereby the shell is contacted sequentially by the heat exchange media of the various lines as it rotates about the carrier so that the overlying layer of material is subjected to successive, distinct thermal treatments.

4,358,994

CAN FLATTENER

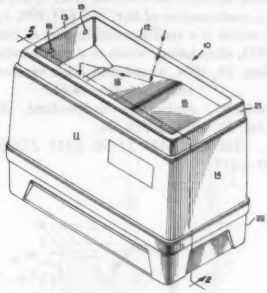
John D. Talley, 1817 Dodge Trail, Grand Prairie, Tex. 75052

Filed Dec. 5, 1980, Ser. No. 213,344

Int. Cl.³ B30B *9/32*

U.S. Cl. 100—45 **5 Claims**

1. An apparatus for flattening cans comprising a cabinet, a can delivery chute extending vertically downwardly from the top wall of said cabinet, a switch extending in said chute, a motorized means within said cabinet for effecting a to and fro movement of a flattening assembly, a movable gate extending in said chute to thereby prevent a can from downward travel in said chute until said switch in said chute is contacted by a can to be flattened, said flattening assembly comprising a post member and a flattener member, said switch in said chute actuating said motorized means, a solenoid switch in said cabinet, said solenoid switch responsive to the opening and closing of said switch in said chute, a solenoid mounted in said cabinet to actuate said gate, a connector means extending between said solenoid and said gate to open said gate thereby permitting downward travel of said can in said chute, a timer associated with said motorized means whereby said post member engages said can at the upper portion of said chute to bend the same and again in timed relationship the can is caused to descend into the



lower portion of said chute where the same is contacted with said flattener which is also caused to travel to and fro in said cabinet to effect a flattening of said can in said chute.

4,358,995

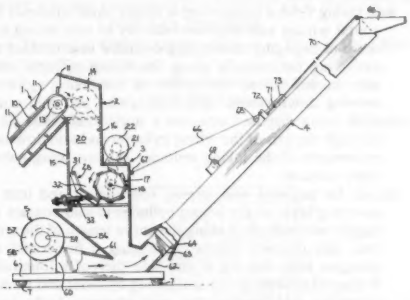
APPARATUS FOR CRUSHING ARTICLES

James A. Ballo, Elm Grove, and Charles F. Constable, Racine, both of Wis., assignors to Vivitar Corporation, Santa Monica, Calif.

Filed Sep. 2, 1980, Ser. No. 183,399

Int. Cl.³ B30B *9/32*

U.S. Cl. 100—98 R **10 Claims**



1. An apparatus for crushing articles, comprising a housing, a polygonal-shaped drum mounted for rotation within the housing having a plurality of generally flat surfaces, adjacent surfaces being connected at junctions, means to rotate the drum about its axis, a plurality of blades, each blade connected to one of said surfaces and having a forward tip portion projecting forward in the direction of the drum rotation from the respective junction, said tip portion being spaced radially outward from the next adjacent surface to provide an overhung tip disposed to engage the articles on rotation of the drum, the rear end of each blade being spaced forwardly of the tip of the next adjacent blade to provide a recess defined by said rear end and said one surface and the tip of the next adjacent blade, a pressure member disposed adjacent the drum, and resilient means to bias the pressure member toward the drum, said articles to be crushed being introduced into the space between the pressure member and the drum and being carried toward the nip between the drum and the pressure member by said recesses, said articles being gripped and carried into the nip by said tips and thereafter being progressively compressed by the outer surfaces of said blades.

4,358,996
ROTARY OFFSET PRINTING PRESS

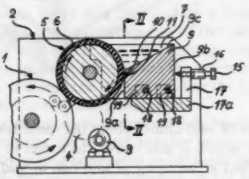
Jarl E. S. I. Ohlsson, Stockholm, Sweden, assignor to Texogesa, S.A., Switzerland

Continuation of Ser. No. 856,844, Dec. 1, 1977, abandoned, which is a continuation of Ser. No. 681,199, Apr. 28, 1976, abandoned, which is a continuation-in-part of Ser. No. 624,259, Oct. 20, 1975, abandoned, which is a continuation of Ser. No. 500,550, Aug. 26, 1974, abandoned. This application Mar. 28, 1979, Ser. No. 24,662

Claims priority, application Switzerland, Aug. 28, 1973, 12278/73; Jul. 31, 1974, 10554/74

Int. Cl.³ B41F *31/06*; B41L *27/08*

U.S. Cl. 101—217 **10 Claims**



1. A rotary offset printing press for offset printing with greasy ink having a viscosity of at least 50 poise, said press comprising a horizontal rotatable plate cylinder, a horizontal rotatable inking cylinder for inking said plate cylinder, said inking cylinder having a covering layer of flexible plastic material, means for rotating said cylinders in opposite directions at equal peripheral speeds about parallel horizontal axes, and an inking device for applying a thin uniform layer of said greasy ink to said inking cylinder,

said inking device comprising a rotary small diameter horizontal wiping rod disposed laterally of said inking cylinder and engaging said inking cylinder in a contact zone extending horizontally along the inking cylinder on the side thereof where the surface of the inking cylinder is moving downwardly, said wiping rod and said contact zone being disposed adjacent a horizontal plane passing through the axis of the inking cylinder and said downward movement of the inking cylinder surface being substantially vertical,

means for pressing said wiping rod against and into said covering layer of the inking cylinder in said contact zone rigidly and uniformly along the entire length of the wiping rod, said pressing means comprising a horizontal rigid elongate body having at one side thereof a longitudinal V-shaped groove facing said inking cylinder and rotatably receiving said wiping rod, said elongate body having bearing surfaces in said groove on which said wiping rod bears in line contact, said bearing surfaces being of very hard material selected from the group consisting of very hard metal, and an elastomer having a modulus of elasticity of the order of 2500 daN/cm^2,

variable speed electric motor means for rotating the wiping rod independently of said inking cylinder at an infinitely variable speed in the same rotary direction as the inking cylinder so as to move the surface of the rod upwardly in said contact zone and thereby wipe said inking cylinder, said variable speed electric motor means driving said wiping rod at speeds in the range of from 630 to 2480 rpm and the surface speed at which said inking cylinder is wiped by said wiping rod being in the range of 20 to 40 m/min,

trough means for holding a body of said greasy ink against said inking cylinder in a space extending upwardly from said contact zone for downward removal of an ink film from the body of ink by downward movement of the inking cylinder surface past the wiping rod, and transfer of said film to the plate cylinder, said trough means comprising said horizontal rigid elongate body having at one side thereof said longitudinal V-shaped groove facing said inking cylinder and rotatably receiving said wiping rod, and side plates at opposite ends of said body and embracing opposite end faces of said inking cylinder, said side plates having holes through which said wiping rod extends, said body, side plates, wiping rod and inking cylinder defining a trough to receive said greasy ink,

said pressing means pressing said wiping rod into said elastic covering layer of said inking cylinder with such penetration that variation of penetration has little effect on the thickness of said ink film, and

means for controlling the speed of said variable speed electric motor means to adjust the speed of rotation of said wiping rod to maintain the optical density of the printed material constant and uniform at a selected value.

4,358,997
ADDRESS PRINTING MACHINE

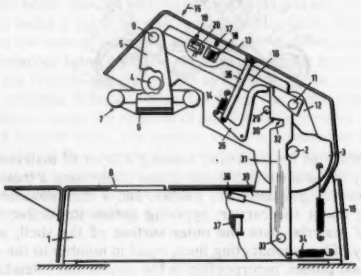
Helmut A. M. Schöttle, Berlin, Fed. Rep. of Germany, assignor to Pitney Bowes Deutschland GmbH, Fed. Rep. of Germany

Continuation of Ser. No. 82,518, Oct. 9, 1979, abandoned. This application Jul. 7, 1981, Ser. No. 281,146

Claims priority, application Fed. Rep. of Germany, Oct. 6, 1978, 2843750

Int. Cl.³ B41F *1/06*

U.S. Cl. 101—316 **23 Claims**



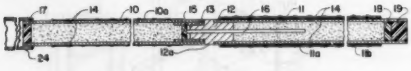
1. An address printing machine comprising: a central frame, a swivel arm pivotally mounted to said central frame, a printing pad mounted on said swivel arm, a printing anvil mounted on said central frame and slidable in a direction toward and away from said printing pad, said printing pad being movable toward and away from said printing anvil upon the pivoting of said swivel arm, an electromagnetic impulse printing device supported by said central frame and connected to said printing anvil to move said printing anvil toward said printing pad when enabled, a locking mechanism connected between said swivel arm and said central frame, said locking mechanism including a locking pin connected to said swivel arm and a locking lever having a groove pivotally connected to said central frame, said locking pin being receivable within said groove when said swivel arm is pivoted to move said printing pad toward said printing anvil to interlock said locking pin within said locking lever groove so as to define the locking position of said locking mechanism and the printing position of said printing pad, and an unlocking lever pivotally mounted on said swivel arm and engageable with said locking lever, first spring means connected to said swivel arm and said unlocking lever, said first spring means urging said unlocking lever against said locking lever to urge said locking lever away from said locking pin upon said swivel arm being pivoted to move said printing pad away from its printing position, and means for enabling said electromagnetic impulse printing device after said printing pad has been placed in its printing position to move said printing anvil toward and into contact with printing pad.

4,358,998

IGNITER FOR A PYROTECHNIC GAS BAG INFLATOR

Fred E. Schneiter, Ogden, Utah, and David C. Cadwell, Clarkston, Mich., assignors to Thiokol Corporation, Newtown, Pa.

Filed Feb. 4, 1980, Ser. No. 118,344
Int. Cl.³ F42B 5/20, 9/18
U.S. Cl. 102—530 8 Claims



1. A dual pressure rise igniter for the propellant in a protective gas bag inflator comprising

a first igniter segment,

at least one additional igniter segment,

with igniter powder contained in each of said segments,

means for igniting said first igniter segment,

combustible fuse means including a delay propellant disc and a fuse, said delay propellant disc having a first side and a second side, said fuse having a first end and a second end,

a first tubular igniter powder enclosing housing for said first igniter segment, said delay propellant disc being positioned within said first housing with said first side thereof in contact with the igniter powder in said first housing,

a second tubular igniter powder enclosing housing for the next adjacent igniter segment,

said first and second housing each having at least one outlet port through the side wall thereof in communication with the igniter powder therein,

pressure sensitive cover means for the outlet port in each of said first and second housings, said cover means on said second housing being thicker than that on said first housing,

an interconnecting member having a hole therein, said fuse extending through said hole in said interconnecting member;

said first and second housings being interconnected by said interconnecting member in coaxial tandem arrangement with said first end of said fuse contacting said second side of said delay propellant disc in said first housing and with said second end of said fuse contacting the igniter powder in said second housing, and

additional cover means for the outlet port in said second housing for providing thermal protection from external heat for the igniter powder contained therein thereby to preclude ignition from external heat transfer prior to receipt of an ignition signal acting through said combustible fuse means.

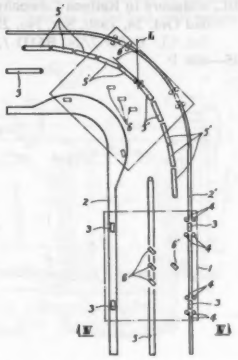
4,358,999

TRANSFER TRUCK SYSTEM

Katsuhiro Nagahori, Chiba, Japan, assignor to SI Handling Systems, Inc., Easton, Pa.

Filed Dec. 4, 1980, Ser. No. 212,771
Claims priority, application Japan, Dec. 21, 1979, 54-177918[U]
Int. Cl.³ B61B 13/12
U.S. Cl. 104—166 6 Claims

1. A transfer truck system of the type in which a driverless wheeled frame rides on rails and has drive wheels pressed against rotating drive shafts disposed in parallel with said rails so that the force for propelling the truck is produced by the frictional engagement between said drive wheels and said drive shafts, a plurality of drive wheels for driving the truck at a straight track section, said drive wheels being mounted on the wheeled frame in series while being in parallel with said rails, at least one auxiliary drive wheel being mounted on said frame in parallel with said first mentioned drive wheels, drive shafts in a curved section arranged so that they are not aligned with the drive shafts in said straight section, and only said auxiliary drive wheel being pressed against said drive shafts in



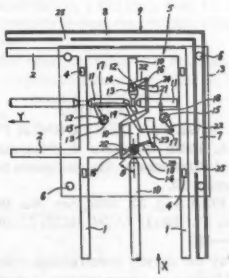
said curved section when said truck traverses said curved section.

4,359,000

RIGHT ANGLE CONVEYOR SYSTEM AND VEHICLE FOR USE THEREIN

Kinjiro Tokunaga, Chiba, Japan, assignor to SI Handling Systems, Inc., Easton, Pa.

Filed Jan. 21, 1981, Ser. No. 226,585
Int. Cl.³ B61B 13/012
U.S. Cl. 104—166 8 Claims



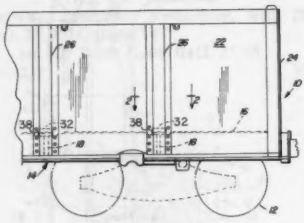
1. A driverless vehicle for use in a right angle conveyor system comprising a square base having support wheels for riding on tracks, said base having first and second sets of drive wheels, said first set of drive wheels being positioned for simultaneous frictional contact with a drive shaft for driving the base in a first direction, said second set of drive wheels being positioned for simultaneous frictional contact with a drive shaft for driving the base in a second direction which is perpendicular to said first direction, each set of drive wheels having drive and accumulation positions, and means on the base for moving the first set of drive wheels from a drive position to an accumulation position and thereafter move the second set of wheels from an accumulation position to an drive position.

4,359,001

SIDE STAKE CONNECTOR FOR RAIL CARS

Rene H. Brodeur, Wilmette, and Boris S. Terlecky, Fox Lake, both of Ill., assignors to Railgon Company, Chicago, Ill.

Filed Oct. 24, 1980, Ser. No. 200,565
Int. Cl.³ B65D *7/24;* **B61D** *17/08*
U.S. Cl. 105—406 R **4 Claims**



1. In an open top rail car including wheel trucks, an underframe mounted on the wheel trucks, a floor supported by the underframe, side walls and end walls mounted to the underframe and extending upwardly and essentially perpendicularly therefrom and side stakes mounted on a vertical edge of the underframe and extending upwardly along the surface of the side walls to reinforce the side walls, an improved connector for mounting the side stake to the underframe comprising:

a tie strap rigidly mounted to an upper surface of said underframe and extending outwardly from said underframe, said tie strap being pivotably connected to the side stake at a point above the lower end of said side stake so that external forces applied to the upper end of said side stake tending to cause outward bending of the side stake are applied to said tie strap at said pivotable connection placing said tie strap in tension and thereby eliminating any torsional bending forces from being applied to said tie strap at the point of connection.

4,359,002

RAILWAY CAR CORNER POST

Babgaunda A. Patil; Bhaskara R. Mutyala, and Harold M. Schilf, all of Birmingham, Ala., assignors to Pullman Incorporated, Chicago, Ill.

Filed Aug. 22, 1980, Ser. No. 180,263
Int. Cl.³ B61D *17/04;* **B62D** *25/08, 27/02*
U.S. Cl. 105—410 **17 Claims**

1. A railway car corner construction comprising:

a side wall having an upper portion, a roof sheet, and an end wall of said car, having a vertical corner post connected to the end wall,

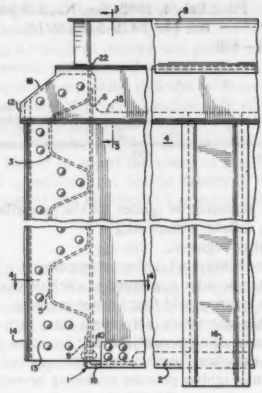
said corner post having a vertical terminal flange extending laterally outwardly from said side wall,

a vertical reinforcing plate affixed between the end wall and said side wall corner post,

a side plate connected to the upper portion of said side wall and to said roof sheet and further having end means connected to said reinforcing plate to rigidly interconnect said side plate with said end wall,

said end wall including an end sill having a horizontal flange which includes cutout means for providing assembly space for said car corner construction.

a sheet metal filler covering an opening deferred by said roof sheet, a top edge of said corner post, said side wall upper portion, and said end wall, and



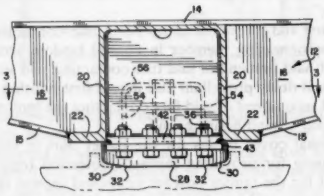
said sheet metal filler having a protrusion extending inwardly to the car center facilitating attachment.

4,359,003

RAILWAY CAR CENTER FILLER

Roy W. Miller, Highland, Ind., and Bhaskara R. Mutyala, Birmingham, Ala., assignors to Pullman Incorporated, Chicago, Ill.

Filed Oct. 27, 1980, Ser. No. 200,729
Int. Cl.³ B61F *1/02, 1/14*
U.S. Cl. 105—420 **8 Claims**



1. A modular center filler for railway vehicles for providing a high strength area in a center filler pocket located within a draft sill of the vehicle at the junction of a car bolster and said draft sill, comprising:

a bottom cover plate having means for attachment to an associated center plate;

front and rear cover plates attached to the bottom cover plate and extending upwardly therefrom at substantially right angles for generally the height of the center filler pocket;

a core member disposed between said front and rear cover plates;

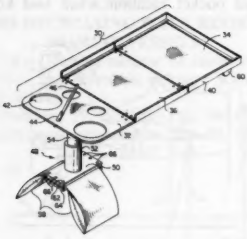
said core member having upstanding, substantially parallel legs spaced inwardly from the sides of said draft sill and having ends attached to the front and rear cover plates, and having a top cover intermediate of and interconnecting the parallel legs, said core forming a hollow beam interconnecting the front and rear cover plates with the bottom cover plate; and

center pin guide means located and secured within the core member extending from the bottom cover plate to an opening in the top cover of the core member.

4,359,004
CAR SEAT TABLES

Austin Chappell, 739 E. 1st South, Kaysville, Utah 84037

Continuation-in-part of Ser. No. 183,024, Sep. 2, 1980, Pat. No. 4,341,418. This application Aug. 24, 1981, Ser. No. 295,789
Int. Cl.³ A47B *23/00*
U.S. Cl. 108—44 8 Claims



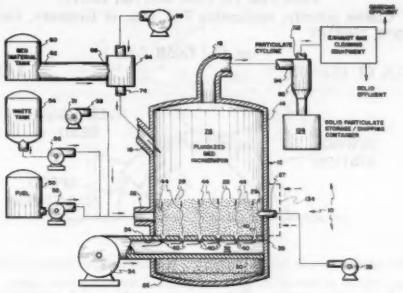
1. A foldable car seat table assembly comprising
a front support section, including
(a) a base portion,
(b) anchoring means for frictionally holding said base portion against a floor forward of a car seat,
and
(c) a first support member perpendicularly attached to said base portion, whereby said first support member protrudes up in front of said seat in a substantially vertical orientation whenever said base portion is frictionally held against the floor of said car by said anchoring means; and
a table unit having a plurality of sections, each section of which is foldable with respect to an adjacent section and is attached to an adjacent section by hinge means, with each section being in the same plane when unfolded, said sections of said table unit including:
(a) a front cup section having a plurality of apertures therein for receiving cups and the like, and
(b) a rear tray section having support means along an underneath back edge thereof for supporting said tray section in an elevated position; and
a second support member perpendicularly attached to an underneath side of said front cup section, said second support member being adapted to be adjustably and detachably secured to said first support member.

4,359,005
FLUIDIZED BED INCINERATION OF WASTE

Virgil F. Baston, Idaho Falls, Id., assignor to Energy Incorporated, Idaho Falls, Id.

Continuation of Ser. No. 51,777, Jun. 25, 1979, abandoned. This application Aug. 5, 1981, Ser. No. 290,050
Int. Cl.³ F23G *7/00*; F23B *7/00*; G05D *11/00*; F27B *15/08*
U.S. Cl. 110—245 2 Claims

1. An incineration system comprising:
a vessel;
an external source of fuel;
means for introduction of the fuel into the vessel;
means for introduction of air into the vessel adequate to maintain fluidization and support combustion;
an external source of waste comprising phosphorus;
means for introducing the waste comprising phosphorus into the vessel;
an external source of lime, limestone and/or slaked lime;
means for causing the temperature of the fluidized bed to reach and be retained at an elevated level substantially within the range of 750° C. to 950° C. and the temperature of the vapor space to reach and be retained at an elevated level substantially within the range of 600° C. to 900° C.;
a fluidized bed within the vessel wherein the material within the bed at any point in time during operation comprises (a) calcium, (b) phosphorus waste and (c) inert calcium phosphate;
means for promoting the separation of calcium phosphate from the other particles of the bed, said means comprising

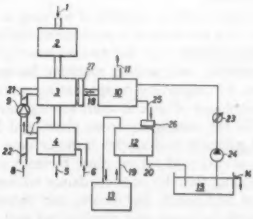


jet grinding means, means segregating the calcium phosphate from the remainder of the bed and means causing lime, limestone and/or slaked lime to be introduced into the bed.

4,359,006
METHOD OF EXTRACTING HEAT FROM MANURE SEWAGE MUD AND OTHER WET WASTE BY COMBUSTION

Henrik Have, 27, Kong Valdemarsvej, DK-4000 Roskilde, Denmark

PCT No. PCT/DK80/00019, § 371 Date Nov. 17, 1980, § 102(e) Date Nov. 17, 1980, PCT Pub. No. WO80/02062, PCT Pub. Date Oct. 2, 1980
PCT Filed Mar. 24, 1980, Ser. No. 224,564
Claims priority, application Denmark, Mar. 26, 1979, 1217/79
Int. Cl.³ F23G *5/04*
U.S. Cl. 110—346 8 Claims



1. A method of extracting heat from manure, sewage mud, and other wet waste by combustion, said method comprising a combined drying-, combustion-, and steam-condensing-process, characterised in that up to the entire amount (7) of flue gas from the combustion of already dried waste is mixed with cold auxiliary air (8) to an appropriately low temperature and pressed through the wet waste in the drier (3) and on to a scrubber (10), wherein the wash water absorbs the heat and transfers it to the site of use, through a heat exchanger (12).

4,359,007

LOOPER

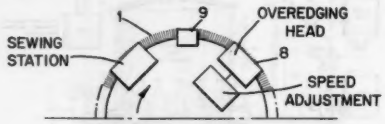
Siegfried Muck, Bayern, Fed. Rep. of Germany, assignor to Kemptener Maschinenfabrik GmbH, Kempten, Fed. Rep. of Germany

Filed Feb. 11, 1980, Ser. No. 120,117

Claims priority, application Fed. Rep. of Germany, Feb. 10, 1979, 2905107

Int. Cl.³ D05B 7/00

U.S. Cl. 112—25 2 Claims



1. An arrangement of the sewing needles with respect to the ring of looper points of a looper for connecting a plurality of knitted parts by two chain-stitched seams, said arrangement comprising a ring of a looper having a plurality of looper points for suspending the knitted parts from a row of stitches of the knitted parts, two sewing needles for producing the respective chain-stitched seams, the respective sewing needles being arranged above the looper points of the ring and being adapted to pass through the knitted parts in stitches which are located in a second or higher row of stitches from the row of stitches that are carried by the looper points of the ring, and one of the two sewing needles being displaced laterally with respect to the looper points of the ring, and wherein an overedging head is provided in combination with said arrangement for producing an overedge seam which surrounds an edge of the knitted parts, said overedging head being arranged such that the chain-stitched seams connecting the knitted parts are located further inwardly from the edge of the knitted parts than the overedge seam produced by the overedging head, and the speed of said overedging head being smoothly adjustable so that the number of stitches in the overedge seam can be adjusted independently of the number of stitches in the chain-stitched seams produced by sewing needles.

4,359,008

APPARATUS FOR PROVIDING A ZIPPER CLOSABLE GARMENT POCKET ENTRY

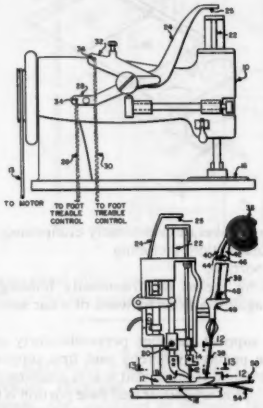
Sydney Newman, 1245 Ave. X, Brooklyn, N.Y. 11235

Filed Jul. 11, 1980, Ser. No. 168,775

Int. Cl.³ D05B 3/12

U.S. Cl. 112—104 14 Claims

1. In a sewing machine capable of forming a zipper closable pocket entry in a garment at a predetermined location therein from a zipper fastener tape fed to said sewing machine along with said garment, said sewing machine having a needle bar means, means for imparting reciprocating motion to said needle bar means, a pair of spaced apart sewing needles disposable in said needle bar means, a throat plate, and feed means for feeding said garment and zipper fastener tape to be sewn by said needles across said throat plate beneath said needles for enabling stitching thereby in accordance with said reciprocating motion of said needle bar means, said zipper fastener tape being disposable between said needles and said garment above said throat plate during said feeding; the improvement comprising a pair of spaced apart knife blades disposed inside of said spaced apart needles, each of said knife blades having a cutting edge disposed behind the needles in the direction of feed of said garment and zipper fastener tape across said throat plate; means for selectively engaging and disengaging said disposed knife blades with said needle bar motion imparting means for enabling reciprocating motion of said disposed knife blades in conjunction with said reciprocating motion of said needles as said garment and zipper fastener tape are fed across said throat plate when said knife blades are engaged with said needle bar motion imparting means, said selective engagement and disengagement means comprising means for enabling both sewing by said needles and cutting by said cutting edges of said garment and said zipper fastener tape being fed across said throat plate at such predetermined pocket location when said knife blades are engaged with said needle bar motion imparting means and for enabling solely sewing by said needles at said predetermined pocket location when said knife blades are



disengaged from said needle bar motion imparting means, said knife blade cutting edges cutting said garment and zipper fastener tape being fed across said throat plate in advance of each stitch by said needles when said knife blades are engaged with said needle bar motion imparting means; whereby the slitting and stitching of said zipper closable pocket entry at such predetermined location may be substantially simultaneously accomplished by said reciprocating motion of said needle bar means.

4,359,009

MEANS FOR TURNING JIGS ON SEWING MACHINES

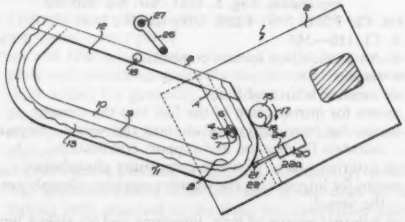
Michael N. Bennison, Bardsey, England, assignor to AMF Incorporated, White Plains, N.Y.

Filed Sep. 15, 1980, Ser. No. 187,398

Claims priority, application United Kingdom, Sep. 14, 1979, 7931890

Int. Cl.³ D05B 21/00

U.S. Cl. 112—121.12 6 Claims



1. In a sewing machine for use in association with a template having means defining a guide surface corresponding to a desired stitching profile, said sewing machine comprising a stationary quide element for engagement with said guide surface of the template and means for moving the template under the needle of the sewing machine with the guide surface run-

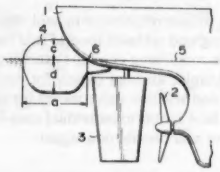
ning past said guide element, an improvement comprising means for detecting curvature in a portion of said guide surface in advance of its engagement with said guide element and means operative on detection by said detecting means of curvature of predetermined magnitude to exert a turning force on said template so as to assist in moving the curved portion of said guide surface past the guide element.

4,359,010

MEANS FOR DECREASING WAVE RESISTANCE ON MARINE VESSELS

Takao Inui, Tokyo, Japan, assignor to Ishikawajima Harima Jukogyi, Tokyo and Kawasaki Jukogyo Kabushiki Kaisha, Hyogo, both of, Japan

Filed May 29, 1980, Ser. No. 144,870
Claims priority, application Japan, Dec. 19, 1978, 53-155723
Int. Cl.³ B63B *1/40*
U.S. Cl. 114—57 **4 Claims**



1. A marine vessel comprising: a hull in which a full load water line is defined, said hull having a rear portion wherein the full load water line has a rearwardmost point, a rudder for steering said vessel mounted to said hull, and at least one wave forming member separate from said rudder and immovably fixed to the rear portion of the hull and extending rearwardly beyond the rearwardmost point of the full load water line, the width of said wave forming member being substantially smaller than that of a portion of said hull to which said wave forming member is connected, so that a sharp transition occurs in the outer profile of the horizontal sectional configuration of said wave forming member and said hull taken along the full load water line, said transition forming a neck portion between said wave forming member and said hull, and said wave forming member having a first substantial portion exposed above the full load water line and located below a top edge of said hull, and a second substantial portion located below the full load water line and located above a lowermost portion of said hull, said wave forming member producing waves which are opposite in phase to and interfere with waves produced at the rear portion of the hull to thereby decrease overall waves at a stern portion of said vessel.

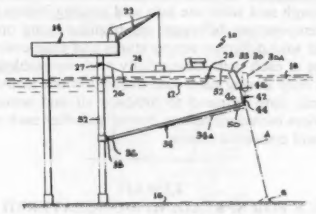
4,359,011

BOAT MOORING SYSTEM FOR A PLATFORM STRUCTURE

Christopher J. Lyles, Los Angeles, Calif., assignor to Amtel, Inc., Providence, R.I.

Filed Feb. 22, 1979, Ser. No. 14,079
Int. Cl.³ B63B *21/00*
U.S. Cl. 114—230 **14 Claims**

1. A platform and boat mooring system comprising:
- a platform structure which is anchored at a substantially fixed location to a seabed and which extends above the surface of the sea;
- a connecting structure having an inner end coupled to said platform structure at a location above the seabed, an outer location spaced from said platform structure, and a middle portion which lies underwater so a boat can float above it;
- a boat having bow and stern end portions; and
- at least one hawser connecting a first of said end portions of said boat to said platform structure, and a second hawser connecting a second of said end portions of said boat which is opposite said first end portion, to said outer location of said connecting structure, said outer location being farther from said platform structure than said second end portion of said boat so that said boat is pulled in opposite directions by said hawsers;



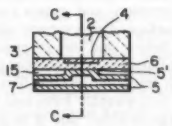
said connecting structure including rigid beam means that resist compressive loading tending to move its outer location towards said platform, so that the connecting structure outer location does not have to be separately anchored to the sea floor to hold it away from the platform.

4,359,012

APPARATUS FOR PRODUCING A SEMICONDUCTOR DEVICE UTLIZING SUCCESSIVE LIQUID GROWTH

Jun-ichi Nishizawa, Sendai, Japan, assignor to Handotai Kenkyu Shinkokai, Sendai, Japan

Continuation of Ser. No. 871,113, Jan. 19, 1978, abandoned, which is a continuation-in-part of Ser. No. 587,137, Jun. 16, 1975, abandoned, which is a continuation of Ser. No. 423,301, Dec. 10, 1973, abandoned. This application May 22, 1980, Ser. No. 152,309
Int. Cl.³ H01L *21/208*
U.S. Cl. 118—59 **12 Claims**



1. In an apparatus for successively producing at least two semiconductor devices each having a multilayer structure including a plurality of epitaxial layers deposited successively on a substrate by the temperature difference method, the improvement comprising a combination structure having:
- boat means having a plurality of substantially vertically disposed wells for containing solutions to be deposited and corresponding in number to at least the number of epitaxial layers to be deposited,
- temperature difference establishing means for causing said solutions contained in the wells to have different temperatures at their upper and lower portions to establish in each well a downwardly decreasing temperature difference between said upper and lower portions thereof,
- a plurality of substrates spacedly disposed in a horizontal direction,
- horizontally movable substrate conveyor means for conveying said substrates into successive contact with respective lower ends of said plurality of wells upon movement of said conveyor means in said horizontal direction, and
- cooling means included in said establishing means and being disposed under said wells below said substrate conveyor means,
- said cooling means having at least in part a cross sectional

area which is surrounded by heat insulating space and has substantially the same area as the lower surface and said substrate and being heat conductive for reducing surface concavity to enhance the flatness of each deposited epitaxial layer by preventing said heat substantially from bypassing said substrate in its downward flow and causing substantially all of the heat from said solution to transmit through said substrate into said cooling means, and

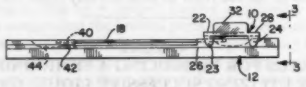
said temperature difference establishing being operative to hold said different temperatures and temperature difference at each well substantially at their established values not only during each said deposition but throughout the whole time required to produce all said semiconductor devices including before, during and after each movement of said conveyor means.

4,359,013

DEVICE FOR SPREADING MONOLAYERED FILMS

Donald L. Prevo, 907 Linden Ave., Winnetka, Ill. 60093

Filed Sep. 8, 1980, Ser. No. 185,020
Int. Cl.³ B05C *11/04, 13/02, 17/10*
U.S. Cl. 118—100 **14 Claims**



9. A device for forming a monolayered film on a slide or the like from a fluid placed on the slide comprising a spreader and a base, said spreader including a support having an upper surface and a lower surface, a bar extending in a transverse direction and downwardly along said lower surface of said support, having a first sloped surface, a second sloped surface and a flat section interposed between the lower ends of said first and second sloped surfaces, said sloped surfaces extending upwardly toward the lower surface of said support from said flat section, said flat section and sloped surfaces extending in said transverse direction, and means extending downwardly from said lower surface of said support along either side of said bar and slightly below said bar to engage said slide and to slightly space the flat section of said bar parallel to the slide or the like on which the monolayered film is to be formed, and means extending downwardly from said lower surface of said support having legs on either side of said support for engaging the base, said base comprising a supporting surface including a recess therein having parallel longitudinal sides for holding a slide in a stationary position, means on the supporting surface for guiding the legs of the spreader and preventing lateral movement of the spreader as the spreader is moved over the slide held within the recess, and ramp means at one end of said guiding means for receiving the legs of said spreader to lift the spreader from the supporting surface whereby said bar is disengaged evenly from contact with the film.

4,359,014

FOOD DISPENSING SYSTEM

Ole Molaug, Tytebaerholen 30, N-4340 Byrne; Gunnar Kluge, and Sveinung Havrevold, both of N-4344 Kvernaland, all of Norway

Filed May 22, 1981, Ser. No. 266,505
Int. Cl.³ A01K *61/02*
U.S. Cl. 119—51 R **9 Claims**

1. A system for automatic feeding of fish within a plurality of tanks, comprising:

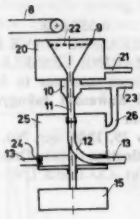
(a) sensing means for producing signals indicative of conditions in said tanks;

(b) control means for receiving said signals and calculating command signals indicative of food amounts required for said tanks;

(c) storage means for holding a supply of food, said storage means being responsive to said command signals for releasing amounts of said food;

(d) weighing means for producing a signal indicative of the weight of said released food;

(e) said control means being responsive to said weight signal for producing a distribution signal; and



(f) distribution means responsive to said distribution signal for distributing said released food to said tanks, said distribution means comprising conduits extending to respective ones of said tanks; an inlet means for receiving said released food; and selector valve means for selectively connecting said inlet means to individual ones of said conduits in response to said distribution signal.

4,359,015

IDENTIFICATION TAG FOR LIVESTOCK

Eugene B. Ritchey, Rte. 2, Box 58, Brighton, Colo. 80601

Filed Feb. 6, 1981, Ser. No. 232,127
Int. Cl.³ A01K *29/00*
U.S. Cl. 119—156 **17 Claims**

1. An identification tag for animals that is installed in an opening cut through the skin tissue of the animal wherein the tag enhances healing of the opening and will shed obstructions, said tag comprising:

a first conical portion to be positioned on one side of the opening with the smaller end toward the opening;

a second conical portion to be positioned on the opposite side of the opening with the smaller end toward the opening; and

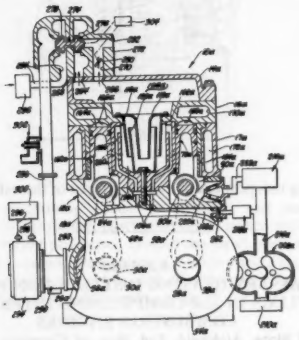
means positionable through the opening to connect said smaller ends of said conical portions together within the opening, the surface of said conical portions extending away from the opening at an angle to the skin tissue so that said surface does not normally contact the skin tissue and will shed away obstacles coming into contact with said surface.

4,359,016

INTERNAL COMBUSTION ENGINE

William V. Bachmann, 22517 Ten Mile Rd., St. Clair Shores, Mich. 48080

Division of Ser. No. 66,475, Aug. 13, 1979, Pat. No. 4,285,304. This application Mar. 23, 1981, Ser. No. 246,422
Int. Cl.³ F02B 75/18
U.S. Cl. 123—52 B 9 Claims



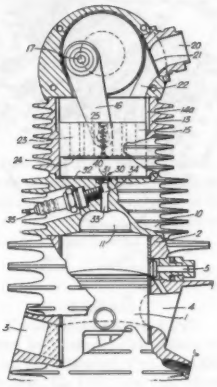
1. An internal combustion engine, comprising engine housing means, a first annular cylinder with a first combustion chamber formed in said engine housing means, said first annular cylinder comprising a first radially inner annular wall and a first radially outer annular wall, a first ring-like piston received in said first annular cylinder for reciprocating movement therein, first motion transmitting means operatively connected to said first ring-like piston for transmitting the power developed by the reciprocating movement of said first ring-like piston to associated output power consuming means, said first motion transmitting means comprising first crankshaft means and first connecting rod means, said first connecting rod means being effective for operatively interconnecting said first ring-like piston to said first crankshaft means, said first crankshaft means comprising a first large diameter live bearing portion journalled within said engine housing means, said first connecting rod means comprising at least first and second connecting rods, said first connecting rod being operatively connected to said first crankshaft means at a first axial end of said first large diameter live bearing portion, said second connecting rod being operatively connected to said first crankshaft means at a second axial end of said first large diameter live bearing portion opposite to said first axial end, a second annular cylinder with a second combustion chamber formed in said engine housing means, said second annular cylinder comprising a second radially inner annular wall and a second radially outer annular wall, a second ring-like piston received in said second annular cylinder for reciprocating movement therein, second motion transmitting means operatively connected to said second ring-like piston for transmitting the power developed by the reciprocating movement of said second ring-like piston to said associated output power consuming means, said second motion transmitting means comprising second crankshaft means and second connecting rod means, said second connecting rod means being effective for operatively interconnecting said second ring-like piston to said second crankshaft means, said second crankshaft means comprising a second large diameter live bearing portion journalled within said engine housing means, said second connecting rod means comprising at least third and fourth connecting rods, said third connecting rod being operatively connected to said second crankshaft means at a first axial end of said second large diameter live bearing portion, and said fourth connecting rod being operatively connected to said second crankshaft means at a second axial end of said second large diameter live bearing portion opposite to said first axial end of said second large diameter live bearing portion.

4,359,017

INTERNAL COMBUSTION ENGINE

Claude H. May, Monk's Rest, 52 Northend, Batheaston, Bath, Avon BA1 7ES, England

Filed Jun. 12, 1981, Ser. No. 273,048
Int. Cl.³ F02B 1/08, 25/12, 33/04
U.S. Cl. 123—69 V 11 Claims



1. In an internal combustion engine operating on a two-stroke cycle and including a first piston reciprocable in a first cylinder to drive a crank shaft and also to inhale and compress a volume of air and a second piston working in a separate cylinder and synchronised with the first piston for drawing in a charge of mixture of air and fuel through an inlet valve, compressing the charge and forcing it through a non-return valve into a relatively small ignition chamber including a sparking plug and communicating with a combustion chamber in the cylinder head, the improvement wherein said separate cylinder is co-axial with and opposed to said first cylinder, said inlet valve is a reed valve located at the crank case end of said cylinder, and said second piston is formed with axial passages, said second piston including at least one non-return valve operating in such a way as to allow the passage of mixture through said second piston during part at least of the outward stroke, whereby on each inward stroke of said second piston a charge of mixture is compressed and forced through said non-return valve and a further charge is drawn into said separate cylinder through said reed valve from a carburettor and on each outward stroke the further charge is subjected to light compression and passes to the other side of said second piston in readiness for compression on the next inward stroke.

4,359,018

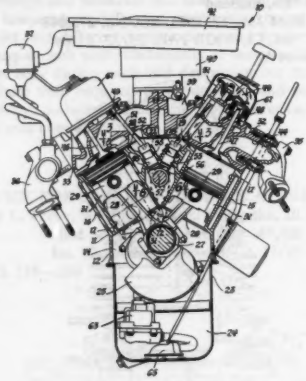
ENGINE CAMSHAFT AND PISTON LUBRICATION

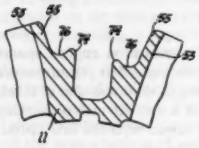
Calvin E. Wade, Madison Heights, Mich., assignor to General Motors Corporation, Detroit, Mich.

Continuation of Ser. No. 25,277, Mar. 29, 1979, abandoned. This application Dec. 10, 1980, Ser. No. 214,621
Int. Cl.³ F01M 1/06
U.S. Cl. 123—90.34 3 Claims

1. An internal combustion engine including a unitary cylinder block having walls defining two V arranged banks of cylinders, a valley with a valve lifter gallery between the banks and a crank chamber below, pistons in the cylinders having skirts engaging the cylinder walls, the pistons being connected with a crankshaft for reciprocation in the cylinders, valves controlling access to each of the cylinders, valve actuating

means engageable with cams of a camshaft arranged longitudinally in the valley below the lifter gallery and connected with the crankshaft for rotation of the camshaft to actuate the valves, means for lubricating the valve actuating means and for directing excess lubricant down the valley walls to the crank chamber for return to an oil sump below, and the improvement





comprising gutter forming ribs integral with and extending along the valley and lifter gallery walls at each cylinder location to intercept the lubricant passing down the walls at each said location and direct it to the various cams of the camshaft disposed below the lifter gallery and associated with the respective cylinder at each said location.

4,359,019

PROCESS FOR PREVENTING THE PUMPING OF A HYDRAULIC VALVE CLEARANCE COMPENSATING ELEMENT IN VALVE OPERATING MECHANISMS OF INTERNAL COMBUSTION ENGINES

Georg Gaede, Munich, Fed. Rep. of Germany, assignor to Bayerische Motoren Werke Aktiengesellschaft, Munich, Fed. Rep. of Germany

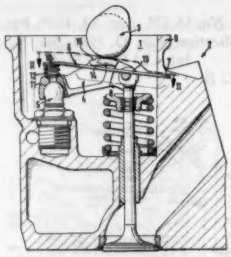
Filed Dec. 3, 1979, Ser. No. 100,026

Claims priority, application Fed. Rep. of Germany, Dec. 2, 1978, 2852293

Int. Cl.³ F01L *1/18, 1/24*

U.S. Cl. 123—90.46 **1 Claim**

1. Process for preventing the pumping of a hydraulic valve clearance compensating element in a valve operating mechanism of an internal combustion engine, wherein a valve actuating lever is supported by means of a hydraulic valve clearance compensating element in a bearing zone of said lever and is controlled by a cam, characterized in that during operation of said engine, an auxiliary force which counteracts a compensating force of the valve clearance compensating element, and which is greater than said compensating force, is applied to the valve clearance compensating element only during a valve lifting phase of the cam in response to movement of said cam, said auxiliary force acting upon the bearing zone of said lever



and being independent of a bearing force of the valve actuating lever.

4,359,020

PRELIMINARY HEATING INSTALLATION FOR GLOW PLUGS IN AIR-COMPRESSING INTERNAL COMBUSTION ENGINES

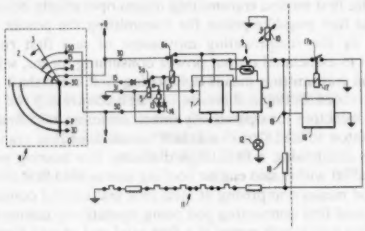
Manfred Stotz, Aichwald, Fed. Rep. of Germany, assignor to Daimler-Benz A.G., Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 930,196, Aug. 2, 1978, abandoned. This application Jun. 9, 1980, Ser. No. 157,937

Claims priority, application Fed. Rep. of Germany, Aug. 2, 1977, 2734718

Int. Cl.³ F02N *17/00*

U.S. Cl. 123—145 A **4 Claims**



1. In an air compressing internal combustion engine,

a glow plug preheating circuit, comprising a resistor means at least in part in the intake air path of the internal combustion engine, and

means for short-circuiting said resistor by either of two conditions,

(a) entirely short-circuiting said resistor, and

(b) short-circuiting a part of said resistor.

4,359,021

RECOIL STARTER

James H. Frahm, Oshkosh, Wis., assignor to Brunswick Corporation, Skokie, Ill.

Filed Jan. 2, 1980, Ser. No. 109,035

Int. Cl.³ F02N *3/02*

U.S. Cl. 123—185 BA **1 Claim**

1. A recoil starter for mounting in concentric alignment with a driven member of an internal combustion engine comprising:

(a) a starter housing for supporting said starter on said engine

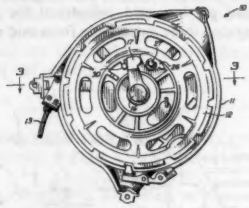
(b) a starter sheave rotationally positioned on a center pivot

(c) a pull rope wrapped around said starter sheave

(d) means for rewinding said rope around said starter sheave

(e) a pawl having a first end and a second end pivotally mounted on said sheave

(f) a pawl engaging means to pivot said pawl to engage said first end with said driven member whereby said sheave and said driven member rotate together until said engine starts



(g) pawl positioning means to maintain said pawl in a standby position, said pawl positioning means including, a torsion spring positioned around the pawl pivot having a first end fixed with respect to said sheave and a second end tensioned with respect to said pawl to rotationally maintain said pawl in said standby position.

4,359,022

VALVE FOR AN INTERNAL COMBUSTION ENGINE

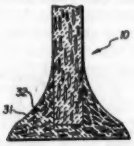
Kiyoshi Nakamura; Masae Nakanishi; Syozo Kawasaki, all of Yokohama; Toshihiko Ochiai, Yokosuka, and Katsutoshi Nishida, Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 17, 1980, Ser. No. 131,276

Claims priority, application Japan, Aug. 2, 1979, 54/98095

Int. Cl.³ F01L *3/02*

U.S. Cl. 123—188 AA **8 Claims**



1. A valve for use in an internal combustion engine, said valve consisting essentially of ceramic material and wherein said valve further comprises a valve stem including fiber-like structure oriented along a longitudinal axis of said valve stem, said valve stem extending in the lengthwise dimension of said valve and a valve top portion including a fiber-like structure oriented so as to be substantially parallel to adjacent surface portions of said valve top portion.

4,359,023

TROUGH-SHAPED SHEET METAL COMPONENT WITH A DEEPER AND A SHALLOWER PORTION

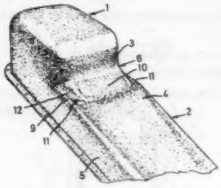
Bengt G. Persson, Olofström, Sweden, assignor to AB Volvo, Gothenburg, Sweden

Filed Apr. 23, 1980, Ser. No. 142,890

Int. Cl.³ E01M *11/06*

U.S. Cl. 123—195 C **1 Claim**

1. In a trough-shaped sheet metal component with a deeper and a shallower portion, for example an oil pan for combustion engines, comprising longitudinal side walls, forward and rear end walls and a transverse wall with a transitional area to the bottom of the shallower portion, the transition between the bottom of the shallower portion and its side walls having a radius which, at least in the area adjacent to said transitional area, is substantially less than the radius of the central portion of the transitional area; the improvement in which the transitional area between the bottom of the shallower portion and the transverse wall of the deeper portion has a greater radius



over its central area than over its side areas, the transition between the bottom of the shallower portion and its side walls extending past said central transitional area so that flat, wedge-shaped portions of the bottom of the shallower portion are formed on either side of said central portion.

4,359,024

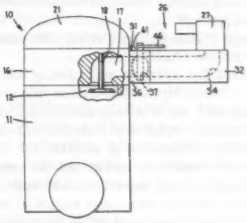
ENGINE ATTACHMENT

Charles W. Lootens, 847 Yale Dr., Mansfield, Ohio 44907, and John C. Leonard, 121 Diamond, Crestline, Ohio 44827

Filed Mar. 12, 1981, Ser. No. 243,099

Int. Cl.³ F02D *9/00;* **F02M** *13/04;* **F16D** *21/04*

U.S. Cl. 123—198 F **8 Claims**



1. A multi-cylinder, reciprocating piston, four-stroke cycle, internal combustion engine, comprising:

an engine block assembly having a plurality of cylinders, a reciprocable piston in each cylinder and an intake port for supplying an air-fuel mixture to each said cylinder;

intake means mounted on said engine block assembly and having a plurality of passages, each of said passages being in communication with the intake port of one of said cylinders;

air-fuel mixture supply means connected to said intake means and communicating with each of said passages thereof for supplying an air-fuel mixture to each of said cylinders in said engine block assembly through one of said passages and its associated intake port;

valve means for regulating the quantity of said air-fuel mixture that can flow through said passages, said valve means including a valve positioned in each of said passages at a location remote from said supply means and adjacent to the intake port of its associated cylinder; and

control means cooperable with said valve means for selectively operating said valves to effect regulation of the quantity of the air-fuel mixture that can flow through said passages.

4,359,025

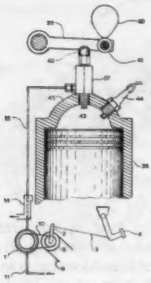
CONTINUOUS FLOW FUEL INJECTOR FOR INTERNAL COMBUSTION ENGINES

Stefan Zeliszkewycz, 1854 N. Lake Dr., Troy, Mich. 48084

Filed Dec. 10, 1979, Ser. No. 101,639

Int. Cl.³ F02B *19/02*

U.S. Cl. 123—275 **9 Claims**



1. A fuel delivery and injection system for a piston and cylinder type internal combustion engine having a combustion chamber and means for supplying air thereto for compression by said piston during a compression stroke thereof prior to a power stroke produced by combustion of a fuel charge in said air compressed by said piston comprising:

an injector having an injector chamber formed therein, and a passage enabling communication of said injector chamber with said engine combustion chamber;

valve means controllably establishing communication between said injector chamber and said combustion chamber via said passage;

fuel supply means for delivering atomized liquid fuel into said injection chamber;

drive means for opening and closing said valve means in timed relationship to said piston movements, said means opening said valve means during the completion of the compression stroke and maintaining said valve means open after combustion is initiated for a time period of a duration to enable a volume of the combustion gases to enter and fill said injection chamber; said drive means thereafter closing said valve means to retain said volume of combustion gases in said injection chamber for the next cycle, whereby said fuel is mixed with said combustion gases in said injection chamber, and enabled to be dispersed into said combustion chamber upon opening of said valve means.

4,359,026

INTERNAL COMBUSTION ENGINE HAVING RODS FOR CONTROLLING TWIST PATTERN IN COMBUSTION AIR SUPPLIED TO VALVE CHAMBERS

Dieter Holthausen, Bergisch Gladbach; Klaus Henke, Nuremberg; Hugo Stock, and Paul Tholen, both of Bergisch Gladbach, all of Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Deutz AG, Cologne, Fed. Rep. of Germany

Filed Apr. 10, 1980, Ser. No. 135,533

Claims priority, application Fed. Rep. of Germany, Apr. 12, 1979, 2914961

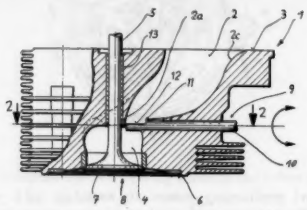
Int. Cl.³ F02B *31/00*

U.S. Cl. 123—306 **6 Claims**

1. A valve-controlled internal combustion engine which includes

a cylinder head portion, said cylinder head portion including a valve chamber; a combustion air inlet channel which communicates with said valve chamber to deliver combustion air thereto, said combustion air inlet channel being formed by an inner wall, an outside wall and a bottom wall, a nozzle area being formed where the combustion air flows past said bottom wall into said valve chamber; and a bore which extends along an axis through said cylinder head portion to directly communicate with said outside wall of said combustion air inlet channel at a point adjacent said bottom wall; and

a cylindrical bar which extends in and along said bore in said cylinder head portion, said cylindrical bar being sufficiently elongated to be extendable from said outside wall



of said combustion air inlet channel and sealingly along said bottom wall to abut said inner wall, said cylindrical bar being rotatable about its axis and slidingly movable along the axis of said bore to be adjustably positioned within said combustion air inlet channel and having means to affect the degree of twist in the combustion air flowing perpendicularly therepast and through said nozzle area into said valve chamber baised on its degree of insertion into said combustion air inlet and its rotational orientation.

4,359,027

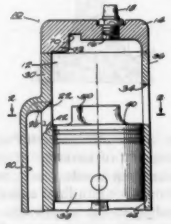
TWO-CYCLE INTERNAL COMBUSTION ENGINE HAVING HIGH SWIRL COMBUSTION CHAMBER

Otto H. Scharpf, Brookfield, Wis., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Sep. 22, 1980, Ser. No. 189,010

Int. Cl.³ F02B *23/08*

U.S. Cl. 123—307 **14 Claims**



1. A two-cycle, internal combustion engine comprising an engine block, a cylinder in said engine block having a head and generally opposed inlet and outlet walls respectively including at least one intake port which is spaced axially from said cylinder head and through which a fresh charge is admitted into said cylinder and at least one outlet port which is spaced axially from said cylinder head and through which exhaust gases are exhausted from said cylinder, a piston mounted for reciprocative movement inside said cylinder relative to a top dead center position and a second position wherein said piston approaches said top dead center position, said piston having a top, and a skirt extending from said piston top in the direction away from said cylinder head and including an inlet face portion which periodically covers and uncovers said intake port, said skirt also including an outlet face portion which periodically covers and uncovers said outlet port, and means for

causing swirling of the fresh charge in the cylinder as the piston moves from said position to said top dead center position, said means for causing swirling including means on said cylinder head and on said piston top for forming two spaced apart and connected chambers in said cylinder when said piston is in said second position and for substantially reducing the volume of one of said chambers as compared to the volume of the other of said chambers as said piston moves to said top dead center position so as thereby to cause the portion of the charge in said one of said chambers to be forcibly swirled into the other of said chambers.

4,359,028

APPARATUS FOR PROVIDING UNIFORM ACCELERATION FOR AN INTERNAL COMBUSTION ENGINE

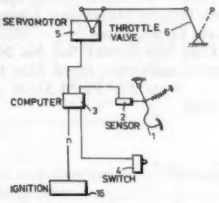
Ernst Fiala, Wolfsburg, Fed. Rep. of Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Fed. Rep. of Germany

Filed Jun. 27, 1980, Ser. No. 163,492

Claims priority, application Fed. Rep. of Germany, Jun. 28, 1979, 2926105

Int. Cl.³ F02D *28/00*

U.S. Cl. 123—350 **8 Claims**



1. A control apparatus for providing favorable fuel consumption during operation of an internal combustion engine in response to operation of an accelerator pedal, said engine having a controllable fuel metering device, comprising:

servomotor means for actuating said fuel metering device;

first means for providing an output indicative of the position of said accelerator pedal;

second means for generating signals indicative of engine rotational speed; and

means responsive to said pedal position and said engine speed signals for controlling the setting of said fuel metering device, said setting of said fuel metering device being dependent only on said pedal position in a first range of values for said speed signals, and said setting being dependent only on said speed signals in a second range of values for said speed signals, said second range higher than said first range.

4,359,029

AIR/FUEL RATIO CONTROL SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Shoji Furuhashi, Yokohama; Masaharu Asano, Yokosuka, and Hideyuki Tamura, Yokohama, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed May 28, 1980, Ser. No. 153,914

Claims priority, application Japan, May 31, 1979, 54-67710

Int. Cl.³ F02B *3/00*

U.S. Cl. 123—440 **18 Claims**

1. An air/fuel ratio control system for an internal combustion engine, comprising:

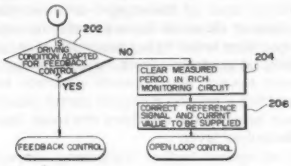
a sensor for measuring an exhaust gas component concentration and for producing a sensor signal having a value proportional to the measured concentration;

first means for comparing said sensor signal value with a predetermined threshold value in order to discriminate between a rich and lean mixture of air/fuel ratio, said first means producing a rich signal when the sensor signal value is larger than said threshold value and a lean signal when the sensor signal value is smaller than said threshold value;

second means for producing a first feedback disabling signal in response to said rich signal;

means for measuring at least one engine condition other than the air/fuel ratio;

third means responsive to said measuring means for producing a second feedback disabling signal when said at least one other engine condition does not satisfy a predetermined feedback condition; and



fourth means responsive to said measuring means for selectively feedback controlling or open loop controlling the air/fuel ratio, said fourth means being responsive to said first and second feedback disabling signals, said fourth means measuring a period of time in which said first feedback disabling signal is inputted and comparing the measured period with a preset value, wherein said fourth means disables said feedback control when the measured period is longer than said preset value and resets the measured period after disabling said feedback control, said fourth means further disabling said feedback control is response to said second feedback disabling signal.

4,359,030

SYSTEM FOR FEEDBACK CONTROL OF AIR/FUEL RATIO IN IC ENGINE WITH MEANS TO CONTROL SUPPLY OF CURRENT TO OXYGEN SENSOR

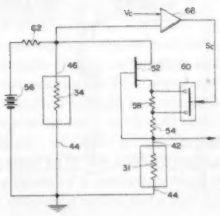
Kohki Sone, Tokyo, and Kenji Okamura, Zushi, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Oct. 22, 1980, Ser. No. 199,630

Claims priority, application Japan, Oct. 25, 1979, 54-148150[U]

Int. Cl.³ F02M *7/00*

U.S. Cl. 123—440 **5 Claims**



1. A system for feedback control of the air/fuel mixture ratio for an internal combustion engine, the control system comprising:

an electrically controllable fuel supply means provided in the intake system of the engine;

an air/fuel ratio detector disposed in an exhaust passage of the engine and having an oxygen-sensitive element of a concentration cell type comprising a substrate, a micro-

scopically porous reference electrode layer formed on the substrate, a microscopically porous layer of an oxygen ion conductive solid electrolyte formed on the substrate so as to cover the reference electrode layer substantially entirely and a microscopically porous measurement electrode layer formed on the solid electrolyte layer and an electric heater;

control means for providing a control signal to the fuel supply means to control the rate of fuel feed to the engine to maintain a predetermined air/fuel ratio by utilizing an output voltage of the air/fuel ratio detector as a feedback signal; and

a sub-system for supplying a heating current to the heater of the air/fuel ratio detector and for causing a DC current of a predetermined intensity to flow through the solid electrolyte layer of the oxygen-sensitive element from the reference electrode layer toward the measurement electrode layer resulting in a migration of oxygen ions through the solid electrolyte layer from the measurement electrode layer toward the reference electrode layer to thereby establish a reference oxygen partial pressure at the interface between the reference electrode layer and the solid electrolyte layer,

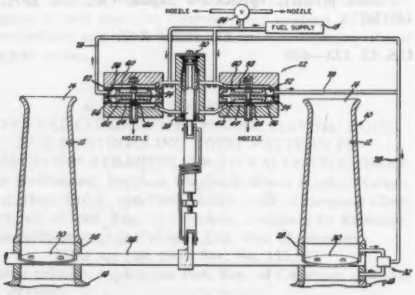
said sub-system further comprising temperature detection means for detecting the temperature of the oxygen-sensitive element as an indication of the internal resistance between the reference and measurement electrode layers of the oxygen-sensitive element and for providing a command signal while the detected temperature is below a predetermined temperature and current regulation means for decreasing the intensity of the DC current flowing through the solid electrolyte layer from said predetermined intensity by a definite value while the temperature detection means provides the command signal, whereby the basic level of the output voltage of the oxygen-sensitive element is precluded from undesirably rising while said internal resistance is excessively high.

4,359,031

ENGINE AIR FLOW RESPONSIVE CONTROL

Donald D. Stoltman, Henrietta, and William E. Gifford, Spencerport, both of N.Y., assignors to General Motors Corporation, Detroit, Mich.

Filed Mar. 7, 1979, Ser. No. 18,130
Int. Cl.³ F02M *39/00, 69/04*
U.S. Cl. 123—452 **9 Claims**



1. In an engine, the combination of:

an induction passage, including parallel throttle bore and bypass portions each opening from an air inlet to a manifold and a throttle in said throttle bore portion between said inlet and said manifold for varying the effective area of said induction passage, wherein the rate of air flow for any selected position of said throttle and for an established pressure in said inlet varies substantially uniformly with the pressure in said manifold when the manifold pressure is greater than about one-half the inlet pressure, and wherein the air flow rate does not vary substantially with the manifold pressure when the manifold pressure is less than about one-half the inlet pressure,

and the improvement comprising:

means in said bypass portion for creating a pressure signal which differs from the inlet pressure by an amount substantially proportional to the square of the air flow rate both when the manifold pressure is less than about one-half the inlet pressure and when the manifold pressure is greater than about one-half the inlet pressure,

means responsive to the difference between the inlet pressure and the pressure signal for generating a physical parameter which varies continuously with and is indicative of that difference,

means responsive to the position of said throttle for generating a physical parameter indicative of the effective area of said induction passage,

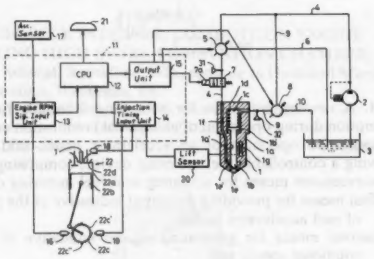
and means for combining said parameters to establish an engine control parameter varying substantially in proportion to the rate of air flow through said induction passage.

4,359,032

ELECTRONIC FUEL INJECTION CONTROL SYSTEM FOR FUEL INJECTION VALVES

Tomonori Ohie, Higashi-Matsuyama, Japan, assignor to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed May 5, 1981, Ser. No. 260,689
Claims priority, application Japan, May 13, 1980, 55-63719
Int. Cl.³ F02M *51/06*
U.S. Cl. 123—458 **13 Claims**



1. An electronic fuel injection control system adapted for combination with at least one fuel injection valve having an injection nozzle, said injection nozzle having a nozzle needle arranged to be lifted by fuel pressure, said fuel injection control system comprising;

pressurized fuel supply means;

passage means for leading pressurized fuel from said fuel supply means to said injection nozzle;

injection timing regulating means for selectively opening and closing said passage means;

valve opening pressure regulating means for regulating the valve opening pressure of said injection nozzle;

detecting means for detecting a condition of an engine associated with said fuel injection valve to produce electrical signals indicative of the condition of said engine; and

electronic control means responsive to said electrical signals to control said injection timing regulating means and said valve opening pressure varying means, said electronic control means including means for arithmetically calculating first and second control signals in a predetermined manner in response to said electrical signals and for supplying said first control signal to said injection timing regulating means to cause said injection timing regulating means to obtain a desired injection timing for the condition of said engine, and for supplying said second control

signal to said valve opening pressure regulating means to cause said valve opening pressure regulating means to obtain a desired injection rate for the condition of said engine;

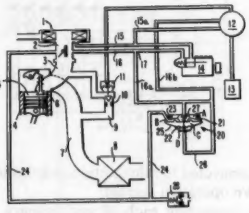
said valve opening pressure regulating means comprising a solenoid arranged to be energized in response to said first control signal, and a movable member secured to said nozzle needle, said movable member being arranged to be displaced axially of said nozzle needle by electromagnetic force produced by energization of said solenoid.

4,359,033

EXHAUST GAS RECYCLING IN DIESEL ENGINES

Tadashi Furuya, Ageo, and Shuji Ota, Omiya, both of Japan, assignors to Nissan Diesel Motors Co., Ltd., Saitama, Japan

Filed Jan. 12, 1981, Ser. No. 224,423
Claims priority, application Japan, Jan. 18, 1980, 55-3494
Int. Cl.³ F02M *25/06*
U.S. Cl. 123—569 **10 Claims**



1. An exhaust gas recycling system for diesel engines having air infeeds comprising

an exhaust gas recycling valve for recycling part of the exhaust gases from the engine exhaust to the engine air infeed,

a vacuum pump for actuating said recycling valve,

a vacuum amplifier coupled to and controlling said recycling valve in response to an input negative pressure in said air infeed, and

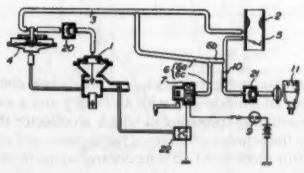
means operable between the air infeed and the vacuum amplifier for modifying the negative pressure which controls the vacuum amplifier.

4,359,034

EXHAUST GAS RECIRCULATION CONTROL SYSTEM

Yasushi Mase, and Toshikazu Okamura, both of Tokyo, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Division of Ser. No. 45,410, Jun. 4, 1979, Pat. No. 4,267,809.
This application Mar. 13, 1981, Ser. No. 243,425
Claims priority, application Japan, Jul. 5, 1978, 53-80944
Int. Cl.³ F02M *25/06*
U.S. Cl. 123—571 **3 Claims**



1. An exhaust gas recirculation control system for an internal combustion engine having an intake passage and an exhaust passage, comprising:

an exhaust gas recirculation passage connected between said intake passage and said exhaust passage of the engine;

a control valve for controlling the exhaust gas recirculation rate flowing through the exhaust gas recirculation passage, the valve being opened in response to intake vacuum from said intake passage;

a vacuum passage connected between the intake passage and the valve;

a delay valve disposed in the vacuum passage, the delay valve having a one-way check valve oriented to allow fluid flow only toward said intake passage, and an orifice positioned to equalize the pressure on opposite sides of said check valve when said check valve is closed;

an air passage connected to the vacuum passage between the intake passage and the delay valve;

an electromagnetic valve disposed in the air passage; and

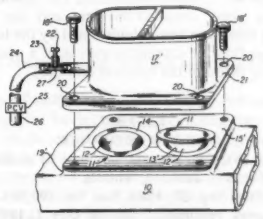
means to open said electromagnetic valve to introduce air into the vacuum passage during deceleration of the engine.

4,359,035

INTAKE MANIFOLD FUEL ATOMIZING SCREEN

Edward E. Johnson, 2107 Plymouth Rock, Richardson, Tex. 75081

Continuation of Ser. No. 973,240, Dec. 29, 1978, abandoned.
This application Aug. 22, 1980, Ser. No. 180,329
Int. Cl.³ F02M *29/00*
U.S. Cl. 123—593 **7 Claims**

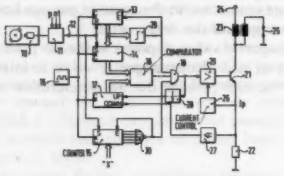


1. In an internal combustion engine intake manifold system having openings beneath engine carburetors and a PCV vacuum flow line communicating the PCV valve with the vacuum inlet of the intake manifold system: a screen unit of relatively fine mesh screening of at most a 30—30 mesh screen with maximum wire diameter of 0.020 inches having a depending formed depression sized to fit the intake opening of the intake manifold beneath a barrel of a carburetor with the depending formed depression extending down and away from the carburetor; a mounting flange surrounding the depending formed depression sized to be clamped with a carburetor gasket between the carburetor mounting boss on the intake manifold; wherein said depending formed depression has walls angled inward and away from the wall of said intake opening, and an adjustable air vacuum valve "T" fitting with an air bleed opening into the PCV vacuum line, said screen unit and "T" fitting cooperating to establish and to maintain a predetermined air/fuel combustion mixture ratio for the intake manifold system.

4,359,036
IGNITION SYSTEM FOR INTERNAL COMBUSTION ENGINES

Karl Seeger, Markgröningen; Werner Jundt, Ludwigsburg, and Manfred Mezger, Markgröningen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Dec. 5, 1980, Ser. No. 213,591
Claims priority, application Fed. Rep. of Germany, Mar. 14, 1980, 3009822
Int. Cl.³ F02P *3/00*
U.S. Cl. 123—609 **6 Claims**



1. Ignition system for an internal combustion engine including an ignition coil, in the primary circuit of which an electronic switch and in the secondary circuit of which at least one spark gap is connected, apparatus for controlling the dwell angle for control of the switching times of said electronic switch in dependence on the signals of an ignition timing sensor, said sensor providing only a single signal per ignition event, and a counting apparatus in which speed dependent counting values are determined periodically and are counted down, each value under control of one edge of a signal from said sensor, the electronic switch being closed upon reaching of a settable triggering counting value, said system further comprising:

means for simultaneously initiating the count-down of said speed dependent counting value and the opening of the electronic switch (**21**) in response to said one edge of a signal from said sensor, and

means for setting said triggering counting value by periodic up and down counting processes, the upwards count in processes being constant in time and the downwards counting processes being determined by the length of time of current flow of current in excess of a presettable current value through the ignition coil (**23**).

4,359,037
IGNITION DEVICE

Walter Stangl, Wiesing, Austria, assignor to Jenbacher Werke Aktiengesellschaft, Jenbach, Austria

Filed Sep. 25, 1980, Ser. No. 190,756
Claims priority, application Austria, Oct. 1, 1979, 6389/79
Int. Cl.³ F02P *1/00, 5/00, 9/00, 5/12*
U.S. Cl. 123—643 **5 Claims**

1. An ignition device for a multi-cylinder internal combustion engine having at least one spark plug for each cylinder, said ignition device comprising:

a respective ignition transformer assigned to each of said spark plugs, each of said ignition transformers having a primary winding and a secondary winding;

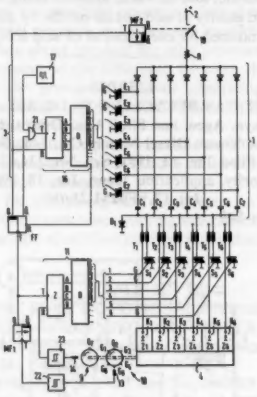
a plurality of ignition capacitors, commonly connected on one side with the primary windings of said transformers and being individually connected on the opposite side to a charging current source;

a respective discharge switch connected to each of said capacitors;

a first control circuit connected to said discharge switches for operating same in a preprogrammed step-by-step sequence, said capacitors each being connected in circuit with at least one of said discharge switches and each discharge switch being connected in circuit with at least one of said capacitors whereby the energy level applied through the respective primary windings is controlled by the operation of said switches by said first control means for each spark plug firing;

respective ignition distributing switches connected between each primary winding and said source and operable independently of said discharge switches;

second control means including a step-by-step actuator operatively connected to said ignition distributing switches for successive operation thereof;



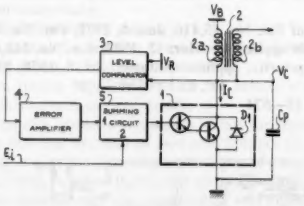
means for connecting each of said primary windings to a respective spark plug; and

trigger means positively connected to said internal combustion engine for clocking said actuator and simultaneously activating said first control circuit to select the respective energy level per spark plug firing.

4,359,038
ELECTRONIC IGNITION-COIL CONTROL DEVICE FOR AN INTERNAL COMBUSTION ENGINE

Andre Xiberas, Paris, France, assignor to Groupement d'Interet Economique de Recherches et de Developpement PSA, Paris, France

Filed Sep. 18, 1980, Ser. No. 188,493
Claims priority, application France, Sep. 21, 1979, 79 23602
Int. Cl.³ F02P *3/04*
U.S. Cl. 123—644 **5 Claims**



1. An ignition-coil control device for an internal combustion engine having an ignition-coil with a primary and a secondary winding, a switching transistor in which a collector thereof is connected to the primary winding of the ignition-coil and a base of the transistor receives a two state control signal from an electronic transducer which signal is synchronous with the rotation of the engine to either turn-off or turn-on said transistor, said control device comprises in series-connected relation:

a level comparator having a first input connected through a

divider network to the collector of said switching transistor and having a second input connected to a fixed direct-current voltage source and providing an output in response to the voltage at the collector of said switching transistor;

an error amplifier connected to the output of said level comparator;

a summing circuit which receives the output of said error amplifier and said two-state control signal in order to protect said transistor from overvoltage occurring during operation by regulating the current which flows through the primary winding of said ignition coil.

4,359,039

SELF-CLEANING PLATE

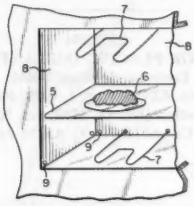
Fusaoki Uchikawa, Kamakura, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Aug. 29, 1980, Ser. No. 182,610

Claims priority, application Japan, Oct. 4, 1979, 54-137592[U]

Int. Cl.³ A21B *1/00*

U.S. Cl. 126—19 R **5 Claims**



1. A self-cleaning plate comprising a metallic substrate layer and a coating layer, wherein said substrate is a continuous three dimensional porous material, wherein the pores are filled with a binder having oxidation catalyst particles uniformly distributed therein and wherein said coating layer also comprises said binder having said oxidation catalyst particles uniformly distributed therein.

4,359,040

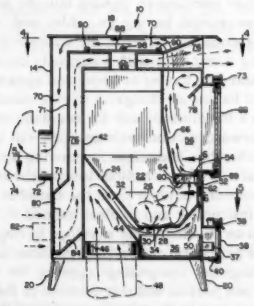
FREE STANDING STOVE

Donald S. Martenson, 24430 S. Highway 99E, Canby, Oreg. 97013

Filed Jul. 1, 1980, Ser. No. 165,046

Int. Cl.³ F24C *1/14*

U.S. Cl. 126—77 **13 Claims**



1. A free standing stove comprising:

a firebox for initiating the combustion of fuel, said firebox including a lower portion with a draft inlet therein;

a first conduit for conveying air to said draft inlet;

a draft inlet damper for controlling the flow of the air from said conduit into said lower portion of said firebox, said draft inlet damper including means for permitting combustion by-products to drop downwardly out of said firebox;

a secondary combustion chamber for continuing the combustion, said secondary combustion chamber receiving the gasses of combustion from said firebox and further oxidizing the gasses, said secondary combustion chamber including a lower portion;

a second conduit for conveying air into said lower portion of said secondary combustion chamber, said second conduit receiving air from said first conduit;

a third conduit for conveying the gasses of combustion from said secondary combustion chamber; and

a bypass damper for controlling the flow of gasses from said firebox to said third conduit, thus bypassing said secondary combustion chamber.

4,359,041

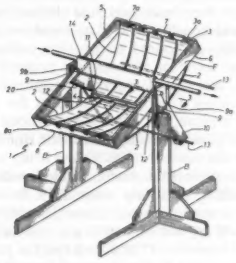
LIGHT ENERGY CONCENTRATING DEVICE

Erlin E. Snodgrass, 11616 Kirkwood, Stafford, Tex. 77477

Filed Oct. 31, 1979, Ser. No. 89,993

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—424 **2 Claims**



1. A solar concentrating reflector assembly comprising:

a frame;

a plurality of half-parabolically shaped reflector segments, each segment having one end defining the vertex of said half-parabola and the other end defining the aperture of said half-parabola;

mounting means for pivotably attaching each of said segments to said frame for rotation about a first axis, said first axis defined by a line connecting the vertex end of the segment with the aperture end of the segment, said segments forming a half-parabolically shaped trough when not pivoted;

one end of said first axes being longitudinally offset from an imaginary plane perpendicular to the axis of the half-parabolically shaped trough by an amount equal to:

$$\text{aperture width} - [0.45 \log (10 \text{ focal length})]$$

where the aperture width is equal to twice the perpendicular distance from the aperture of the half-parabolic trough to its vertex and the focal length is the distance from the vertex to the focal point divided by twice the aperture width;

a light energy receiving medium mounted along a line formed by the loci of the foci of each half-parabolically shaped segment when said segments are not pivoted;

means for pivoting said segments in unison about said first axes;

means for pivoting said frame about a second axis, said

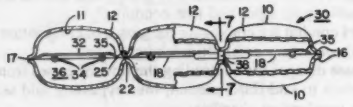
second axis being defined by a line on which said energy receiving medium is fixed.

4,359,042

CONTOURED INSULATION WINDOW FOR EVACUATED SOLAR COLLECTOR

Yilmaz C. Belentepe, Corning; Li-Chung Lee, Horseheads, and Arthur H. Wilder, Corning, all of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Jun. 4, 1980, Ser. No. 156,611
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—443 **8 Claims**



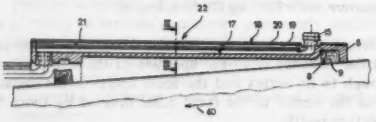
1. An evacuated flat plate solar collector comprising, means forming a housing including a pair of opposed glass windows each having a longitudinal and lateral expanse bounded by a peripheral margin and fused together thereabout defining a partially evacuated chamber therebetween, a solar energy absorber segmented into a selected number of plates, said absorber being positioned within said chamber between said windows, fluid channel means joined to said absorber for removing heat therefrom, said fluid channel means passing into and out of said housing, said glass windows each having portions smoothly contoured to provide sufficient strength to withstand the force of atmospheric pressure exerted on one side thereof, the sealed together peripheral margins of the windows forming a peripheral support for the housing and lying within a plane, the contoured portions of each window being formed into a plurality of arcuate domes corresponding in number to the number of plates and being spaced across said window, one plate each being located within a dome, said domes projecting arcuately outwardly from said plane and being joined along adjacent portions thereof to form a plurality of intermediate supports extending across said window longitudinally and laterally of the domes and the plates, junctures of adjacent ones of said domes in one of the windows lying in the plane and freely resting against corresponding portions of the other window thereby providing intermediate mutual support for each window, and said plurality of domes being spaced apart from and out of contact with said plates so as to inhibit conductive heat losses from the solar collector.

4,359,043

ROOFING MEMBER FOR COLLECTING SOLAR ENERGY

Gazel Dominique, Residence Cormontaigne 5/7; Huges Dailliez, 283, rue Nationale, both of a Lille (Nord), and Denis Consigny, La Pierre Plantee, a Rousson (Gard), all of France

Filed Apr. 21, 1980, Ser. No. 141,806
Claims priority, application France, Apr. 27, 1979, 79 11526
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—444 **15 Claims**



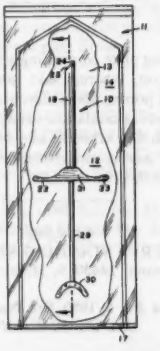
1. A roofing construction for collecting solar energy comprising a multiplicity of like roofing members having externally the shape and dimensions of traditional roofing tiles, said members being assembled in traditional manner with lateral edges of laterally adjacent roofing members overlapping and with lower edges of upper roofing members overlapping upper edges of downwardly adjacent roofing members, each of said roofing members comprising a shell of opaque moldable material having a back wall and opposite side walls, a lower end wall and an upper end portion projecting forwardly from said back wall to form a frame for receiving a front wall, a transparent front wall received in said frame and sealed to said side walls, lower end wall and upper end portion, said transparent front wall being spaced forwardly from said back wall to provide therebetween a heat-carrying fluid cavity, said upper end portion extending longitudinally beyond said transparent front wall and lying under an upwardly adjacent roofing member, said upper end portion having in its back a channel to receive a roof support member and in its front side a first fluid-conducting coupling means having a passage communicating with said cavity, said back wall having in a lower end portion which overlies an upper end portion of a downwardly adjacent roofing member a second fluid-conducting coupling means communicating with said cavity and adapted to interfit with said first coupling means of said downwardly adjacent roofing member to interconnect adjacent roofing members mechanically and to interconnect fluid cavities of adjacent roofing members to provide for circulation of heat-carrying fluid from one roofing member to another.

4,359,044

METHOD FOR PLACING IMPLANT IN UDDER

Francis W. Child, Eagle Bend, Minn. 56446

Division of Ser. No. 62,707, Aug. 1, 1979, Pat. No. 4,308,859.
This application Dec. 11, 1980, Ser. No. 215,542
Int. Cl.³ A61B *19/00*; A61M *31/00*
U.S. Cl. 128—1 R **4 Claims**



1. A method of inserting an implant into the milk cistern of an udder of an animal having an udder and teat attached thereto with a dispensing instrument containing an implant, said teat having a teat duct with a normally closed discharge opening, said teat duct having an upper end open to the cistern, said instrument having an elongated tubular member having a chamber with a longitudinal axis for accommodating the implant and a forward section with an open exit end, a piston located in the chamber, and means for moving the piston along the longitudinal axis of the chamber toward the exit end of the chamber to move the implant from the chamber through the exit end, said instrument and implant located in the chamber being stored in an envelope, said envelope having sheet members with outer peripheral end and side portions thereof releasably secured together comprising: opening the envelope by separating the end portion and side portions of the sheet members to provide access to the tubular member of the dispensing instrument, inserting the forward section of the tubular member of the dispensing instrument into the teat duct through the

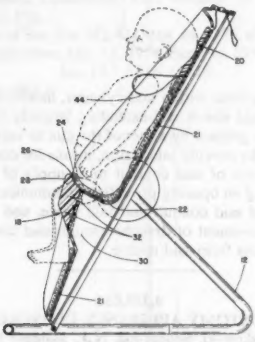
discharge opening thereof to position the tubular member in the teat duct with the exit end adjacent the upper end of the milk duct, using the envelope as a cover during the insertion of the tubular member into the milk duct, moving the implant from the chamber of the tubular member into the cistern of the udder while retaining the tubular member in the teat duct by moving the piston along the longitudinal axis of the chamber relative to the tubular member toward the exit end, and removing the tubular member from the teat duct.

4,359,045

REFLUX CHAIR

Christopher A. Cozzi, 75 28 D Southwest Barnes Rd., Portland, Oreg. 97225

Filed May 15, 1980, Ser. No. 150,068
Int. Cl.³ A61H *1/00*
U.S. Cl. 128—24 R **14 Claims**



1. An arrangement for supporting an infant to relieve pressure on the abdominal region of the infant, comprising:

a. a contoured substantially planar support platform having an indentation transversely extending therein;

b. means for tiltably supporting said platform about a horizontal, transversely extending axis;

c. means for fastening said support platform relative to said supporting means at predetermined angles of inclination;

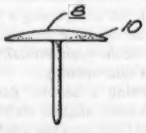
d. and means for restraining the infant on said support platform.

4,359,046

IUD ARRANGEMENT

Seth T. Shaw, Jr., 30036 Via Borica, Rancho Palos Verdes, Calif.

Division of Ser. No. 55,900, Jul. 9, 1979, which is a continuation-in-part of Ser. No. 927,765, Jul. 25, 1978, Ser. No. 928,093, Jul. 26, 1978, Pat. No. 4,233,968, and Ser. No. 928,106, Jul. 26, 1978. This application Jul. 2, 1980, Ser. No. 165,376
Int. Cl.³ A61F *5/46*
U.S. Cl. 128—130 **9 Claims**



1. A medicated intrauterine device of the type insertable into the uterus for retention therein for a predetermined time period and comprising, in combination, a uterus insertable body member polymer matrix having an external surface contacting the uterus, a coating on a first portion of said external surface of said body member comprising a drug, and said drug compromising at least a guanidine in one of a biodegradable crosslinked polymer and biodegradable crosslinked copolymer form and said drug chemically bonded to said surface of said polymer matrix.

4,359,047

GELATINOUS ARTICLES AND COMPOSITIONS

Jan J. Potaczek, Leicester, England, assignor to Advance Tapes (U.K.) Limited, Leicester, England

Filed Mar. 20, 1980, Ser. No. 131,891
Claims priority, application United Kingdom, Mar. 21, 1979, 7909957
Int. Cl.³ A61F *5/44*; A61L *15/06*
U.S. Cl. 128—156 **26 Claims**

1. A gelatinous tacky article of manufacture produced by heating

(a) at least one polyhydric alcohol and

(b) at least one material selected from the group consisting of naturally occurring high molecular weight polysaccharide gums, other than gum Karaya, and resins which are a copolymer of a vinyl ether and a second component selected from maleic anhydride and

its corresponding free acid, together in the absence of solvent to promote chemical reaction between components (a) and (b) and to drive off water produced in the reaction, the reaction being carried substantially to completion.

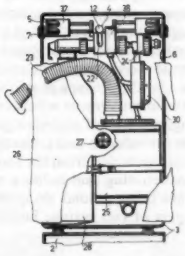
12. An article according to claim 1 or claim 3, when moulded to form a component of a surgical appliance or the like.

4,359,048

AUTOMATICALLY STARTABLE OXYGEN RESCUE DEVICE

Istvan Almasi; Ferenc Kassai, both of Budapest, and Laszlo Nyeste, Ecser, all of Hungary, assignors to Banyaszati Aknamelyito Vallalat, Budapest, Hungary

Filed Jan. 26, 1979, Ser. No. 7,471
Int. Cl.³ A62B *7/00*
U.S. Cl. 128—205.12 **6 Claims**



1. An automatic portable breathing apparatus comprising:

a housing;

a cover hinged to said housing and swingable between a closed position wherein said cover defines an enclosure with said housing, and an open position;

an oxygen bottle mounted in said housing;

an alkali filter mounted in said housing;

an air bag contained in said enclosure and communicating with said filter;

a breathing tube contained in said enclosure and communicating with said oxygen bottle and said filter;

a stop valve in said housing between said oxygen bottle and said breathing tube and said filter;

catch means mounted in said housing and engageable with said cover for maintaining same in said closed position;

a force storing device mounted in said housing including means adapted to release a force and operatively connected to said stop valve for opening same upon release of said force, said device also being positioned to engage and drive open said cover upon release of said force for allowing access to said breathing tube and expansion of said air bag; and

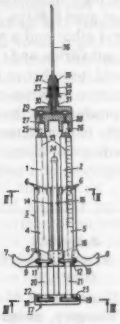
trigger means operatively connected to said catch means and said force storing device for releasing same.

4,359,049

APPARATUS FOR APPLYING A TISSUE ADHESIVE ON THE BASIS OF HUMAN OR ANIMAL PROTEINS

Heinz Redl, Vienna, and Gert Kriwetz, Graz, both of Austria, assignors to Immuno Aktiengesellschaft fur chemisch-medizinische Produkte, Vienna, Austria

Filed Mar. 23, 1981, Ser. No. 246,431
Claims priority, application Austria, Apr. 2, 1980, 1792/80
Int. Cl.³ A61M *5/00*
U.S. Cl. 128—218 PA **6 Claims**



1. In an apparatus for applying a tissue adhesive on the basis of human or animal proteins to be used for seamlessly or seam-supportingly connecting human or animal tissue or organ parts, for sealing wounds, for stopping bleedings and the like, said tissue adhesive being formed in situ by bringing together at least two components comprised of solutions of proteins and clot-promoting coagulation factors, and of the type including a plurality of standardized one-way syringe bodies of synthetic material, said syringe bodies accommodating plungers and ending in coni, and a holding means provided for said plurality of syringe bodies, the improvement which comprises a collecting head connecting said coni of said syringe bodies, separated conveying channels provided in said collecting head for said at least two components emerging from the respective one of said coni, a guide rod penetrating said holding means, and a common actuating means being guided along said guide rod provided for the plungers of said syringe bodies.

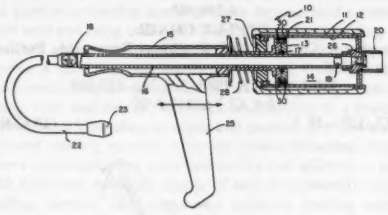
4,359,050

DRENCH GUN

Mervyn F. Reynolds, New South Wales, Australia, assignor to N. J. Phillips Pty. Ltd., New South Wales, Australia

Filed Dec. 19, 1979, Ser. No. 105,177
Claims priority, application Australia, Jan. 19, 1979, PD7407
Int. Cl.³ A61D *7/00*
U.S. Cl. 128—223 **4 Claims**

1. A drench gun to deliver a dosage of drench into the mouth of a beast, said gun including a generally "U" shaped nozzle having a first extremity to be engaged within the mouth of the beast, a conduit having a first end portion attached to the other extremity of said nozzle and a second end portion extending therefrom in the general direction of extension of said first extremity, a hollow cylinder mounted on and encompassing said first end portion said conduit so as to be co-axial and co-extensive therewith, said cylinder being closed at one end and open at the other end which is located nearer said nozzle than said closed end, a piston slidably mounted on the conduit and slidably engaged within the cylinder so as to define within the cylinder a variable volume working space, biasing means biasing the piston towards the open end of said cylinder a sleeve fixed to the piston and slidably mounted on said conduit



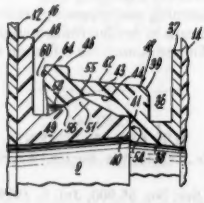
and extending from within said cylinder, handle means rigidly attached to said sleeve and extending laterally therefrom enabling it to be gripped by a user of the gun to vary the volume of said space by moving said piston, means for connecting said first end portion of said conduit to a supply of drench, said conduit having an opening providing communication between the interior of said conduit and said space, and valve means restricting movement of drench through said conduit so that the drench exits from said nozzle.

4,359,051

OSTOMY APPLIANCE CLOSURE

Boguslaw Oczkowski, Spotswood, N.J., assignor to Johnson & Johnson Products, Inc., New Brunswick, N.J.

Filed Mar. 2, 1981, Ser. No. 239,860
Int. Cl.³ A61F *5/44*
U.S. Cl. 128—283 **4 Claims**



1. An ostomy appliance comprising collection means for receiving effluent from the stomal opening of an ostomate; and a base adapted to be secured to the body of said ostomate adjacent said stomal opening and to be releasably connected to said collection means while providing fluid communication between said stomal opening and said collection means;

said collection means comprising a liquid impervious container having an opening therein, and a first generally annular collar means symmetrically aligned about an axis extending from said opening;

said base comprising a second generally annular collar means symmetrically aligned about said axis and adapted for insertion partially into the confines of said first collar means with a portion thereof remaining outside the confines of said first collar means, and a flexible radially extending flange disposed circumferentially about the portion of said second collar means remaining outside the confines of said first collar means, said flange being spaced

axially apart from the confronting end of said first annular collar means;

sealing means cooperatively disposed on the confronting surfaces of said first and second collar means for providing a liquid impermeable seal therebetween;

said flange extending a sufficient radial distance beyond the outer periphery of said first annular collar means such that in response to an axial force on said flange in a direction toward said first collar means, said flange will deflect into engagement with said confronting end of said first collar means and produce a force tending to tighten the sealing action of said cooperative sealing means, and means on said flange for securing said base to the body of said ostomate.

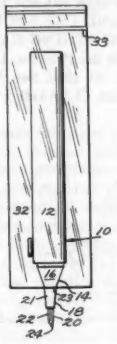
4,359,052
REMOVABLE TIP CAUTERY

David E. Staub, Clearwater, Fla., assignor to Concept Inc., Clearwater, Fla.

Continuation of Ser. No. 652,422, Jan. 26, 1976, abandoned. This application Apr. 12, 1978, Ser. No. 895,625

Int. Cl.³ A61B *17/38*

U.S. Cl. 128—303.1 5 Claims



1. A portable cautery apparatus of the type utilizing a self-contained voltage source comprising a housing, a voltage source mounted in said housing and contained within said housing, control means adapted to control said voltage source moveably mounted to said housing in operative electrical engagement with said voltage source, adaptor means for providing a connection between said voltage source and a heater tip means, said adaptor means mounted to said housing and extending from said housing, said adaptor means comprising a member defining a blind bore and tubular first and second electrodes mounted in said member and substantially terminating at an end of said blind bore, said first electrode being electrically connected to said voltage source and said second electrode being electrically connected to said control means, said adaptor means member having a forward end formed with and terminating in a planar surface, a flexible sheath completely enclosing said housing to provide a contamination free environment for said housing, a disposable heater tip means adapted to be removably mounted to said adaptor means, said adaptor means being enclosed by said sheath and isolated from contact with said heater tip means in order to eliminate potential patient-to-patient contamination when said housing is utilized in consecutive surgical procedures, said heater tip means having a rear end which defines a planar surface, said heater tip means comprising a replaceable tip housing, tubular shaped third and fourth electrodes mounted inside said tip housing and extending therefrom, a heater element comprising a wire tip interconnected between ends of said third and fourth electrodes, the other ends of said third and fourth electrodes piercing said sheath and engaging said first and second electrodes of said adaptor means.

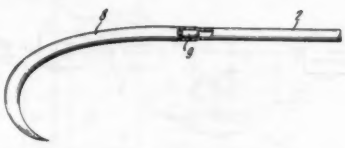
4,359,053
MEANS OF FASTENING SILICONE TUBING TO A RIGID SURGICAL NEEDLE

Thomas A. Benjamin, Newcomerstown, Ohio, assignor to Snyder Laboratories, Inc., New Philadelphia, Ohio

Filed Jun. 5, 1980, Ser. No. 156,837

Int. Cl.³ A61B *17/06*

U.S. Cl. 128—339 5 Claims



1. A cylindrical metal surgical needle for secure attachment to flexible silicone tubing without the use of any bonding materials, said needle comprising at one end a rigid, smooth cylindrical connector portion having no external surface texturing and no additional mechanical locking features, said connector portion having a diameter greater than the inner diameter of the tubing to be attached to said connector and wherein said connector has a semi-spherical contour on one end which allows for easier engagement of the tubing to the connector and a neck portion of smaller diameter and length protruding from the opposite end of the connector and wherein said neck attached the connector to a cylindrical body portion of the needle and wherein said neck portion is a means of providing a relieved area permitting the silicone tubing to relax to its original diameter, and wherein the body portion has a diameter larger than the connector to allow the outer diameter of the tubing to be substantially flush with the cylindrical surface of the body of the needle and also to act as a rigid stop means for the tubing to mate against.

4,359,054
RETAINER ARRANGEMENT AND METHOD FOR APPLYING A MEMBRANE TO A PHYSIOLOGICAL SENSING UNIT

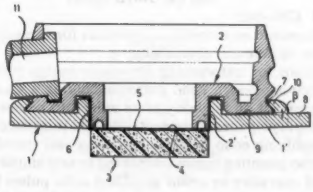
Helmut J. Leist, and Karl-Heinz Pomorin, both of Freiburg im Breisgau, Fed. Rep. of Germany, assignors to Hellige GmbH, Freiburg im Breisgau, Fed. Rep. of Germany

Filed Jun. 22, 1981, Ser. No. 276,184

Claims priority, application Fed. Rep. of Germany, Jul. 4, 1980, 3025409

Int. Cl.³ A61B *5/00*

U.S. Cl. 128—635 8 Claims



1. A retainer arrangement for applying a membrane to a physiological sensing unit for the transcutaneous determination of the magnitude of physiological quantities, particularly for measuring the partial pressure of gases in blood or the like, comprising a membrane, a clamping ring for removably assembling the membrane with the sensing unit, and means, including an auxiliary retainer element made of self-adhesive foam

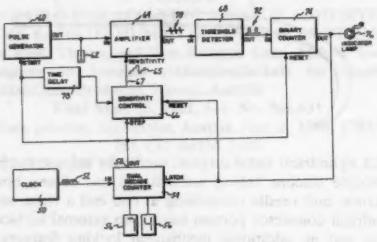
material, for temporarily and removably securing the membrane to the clamping ring prior to assembly with the sensing unit.

4,359,055

AUTOMATIC DIGITAL BACKFAT METER

David L. Carlson, Ames, Iowa, assignor to Renco Corporation, Minneapolis, Minn.

Filed Jun. 23, 1980, Ser. No. 162,319
Int. Cl.³ A61B *10/00*
U.S. Cl. 128—660 **15 Claims**



1. Ultrasonic measurement apparatus for measuring backfat thickness in animals, comprising:

means for transmitting ultrasonic energy pulses and for receiving return echo pulses, including a probe for placement of the body of an animal to be tested;

means for detecting the n^{th} one of the n strongest echo pulses from a given transmitted pulse, wherein n is a predetermined number corresponding to the number of fat layers in the type of animal to be tested; said detecting means includes threshold means for ignoring echo pulses of less than a predetermined minimum amplitude;

means responsive to a count of less than n echo pulses for increasing the amplitude of the next succeeding transmitted pulse so that said apparatus is incrementally calibrated to detect said strongest echo pulses while ignoring weaker spurious pulses; and

measurement and display means responsive to said detecting means for measuring the travel time of said n^{th} echo pulse and for displaying the travel time in terms of the thickness of backfat to a desired inner fat layer.

4,359,056

AUTOMATIC DIGITAL BACKFAT METER

David L. Carlson, Ames, Iowa, assignor to Renco Corporation, Minneapolis, Minn.

Continuation-in-part of Ser. No. 162,319, Jun. 23, 1980. This application Jan. 8, 1981, Ser. No. 223,481
Int. Cl.³ A61B *10/00*
U.S. Cl. 128—660 **10 Claims**

1. Ultrasonic measurement apparatus for measuring backfat thickness in animals, comprising:

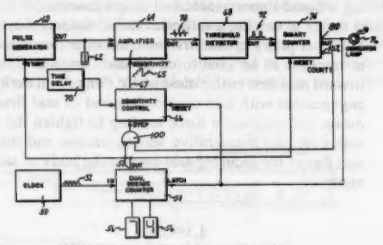
(a) means for transmitting ultrasonic energy pulses and for receiving return echo pulses, including a transducer for placement on the body of an animal to be tested;

(b) amplifying means connected to said transducer means for amplifying echo pulses received by said transducer;

(c) echo counting means connected to said amplifying means and operative to count amplified echo pulses having amplitude greater than a predetermined threshold value;

(d) means for increasing the responsiveness of said ultrasonic measurement apparatus on succeeding transmitted pulses until a first predetermined number of echo pulses is counted by said echo counting means and for fixing the responsiveness of said apparatus at a substantially constant level after said first predetermined number is counted;

(e) measurement and display means for measuring travel time of pulses in the animal's body, and operative in response to the counting of a second predetermined number of echo pulses at said constant level by said echo counting means to measure the travel time of the echo pulse corresponding to said second predetermined number and to display said measured travel time in terms of depth in the animal's body corresponding to said echo.

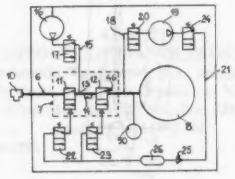


4,359,057

APPARATUS FOR MEASURING OXYGEN CONSUMPTION AND THE EXCHANGE OF OTHER BREATHING GASES

Giovanni Manzella, Via del Pratello, 13 - Bologna, Italy

Filed Sep. 30, 1980, Ser. No. 192,565
Int. Cl.³ A61B *5/08*
U.S. Cl. 128—718 **4 Claims**



1. An apparatus for measuring the consumption or exchange of a gas component in breathing gases inhaled or exhaled by a subject over a predetermined period of time, including means sensing the amount of said gas component in the inhaled and exhaled gases and determining the volume of the exhaled gas during said time period, said means providing electrical signals proportionate to said amounts and volume, which are supplied to a data processing unit computing the consumption value, said apparatus comprising:

a variable volume vessel for collecting the exhaled gas, a main pneumatic circuit connecting said subject to said vessel,

a pair of valve means arranged along said circuit and defining a compartment in which said sensing means is arranged, a first exhaust opening arranged in said compartment and connecting the latter with the ambient, a second exhaust opening arranged along said circuit between said subject and said compartment and connecting said subject to the ambient, said pair of valve means being movable between a first position in which they close said compartment and a second position in which they close said exhaust openings,

an auxiliary circuit for supplying into said compartment the same gas inhaled by the subject,

means for controlling said pair of valve means and said auxiliary circuit so that, in said first position, the supplied gas enters said compartment and flows out through said first opening, while the gas exhaled by the subject is deflected into the ambient through said second exhaust

opening, whereas, in said second position the supplying of gas into said compartment is interrupted and the exhaled gas flows through said compartment into said vessel, means being further provided for emptying said vessel when the valve means are in said first position.

4,359,058

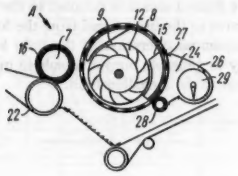
PRECLEANER OF A GRAIN HARVESTING MACHINE

Alexander I. Rusanov, Sadovo-Chernogryazskaya ulitsa, 16/18, kv.100, Moscow; Vitaly P. Gavrilov, ulitsa Profsojuzov, 14, kv.57, Krasnoyarsk; Jury N. Yarmashev, I Krepostnoi pereulok, 34, kv.213, Taganrog; Pavel M. Arbuzov, ulitsa Robespiera, 23, kv.18, Krasnoyarsk, and Nadezhda M. Levit, Yaroslavskoe shosse, 125, kv.79, Moscow, all of U.S.S.R.

Filed Jan. 12, 1981, Ser. No. 223,992

Int. Cl.[3] A01F *12/18*

U.S. Cl. 130—27 Z 10 Claims



1. A precleaner apparatus for use in a grain harvesting machine for precleaning grain material, said precleaner apparatus comprising, a rotary driven perforated cylinder for receiving thereagainst cropped grain material thrown against it, for transporting light admixtures of chaff and straw particles downstream of the perforated cylinder and to allow the grain to drop below the perforated cylinder, a rotary driven precleaning fan internally of the perforated cylinder for developing a suction to attract and maintain said light admixtures of chaff and straw particles for delivery by the perforated cylinder downstream thereof and to allow the grain to bounce off the perforated cylinder, and a thrower device upstream of the perforated cylinder to throw the cropped grain material against the perforated cylinder.

4,359,059

PROCESS FOR THE PREPARATION OF AROMATIC SUBSTANCES

Ursula Brummer, Halstenbek, and Volker Heemann, Reinbek, both of Fed. Rep. of Germany, assignors to B.A.T. Cigaretten-Fabriken GmbH, Hamburg, Fed. Rep. of Germany

Filed Mar. 5, 1981, Ser. No. 240,854

Claims priority, application Fed. Rep. of Germany, Mar. 8, 1980, 3009032

Int. Cl.[3] A24C *3/12, 15/30*

U.S. Cl. 131—276 8 Claims

1. A process for the preparation of aromatic substances from a diterpene containing alcoholic extract from tobacco plant material, which comprises exposing said extract to a source of oxygen and a source of ultraviolet light in the absence of sensitizers.

4,359,060

NAIL POLISH DISPENSING APPARATUS

Edith Walker, 664 E. 31 St., Brooklyn, N.Y. 11210

Continuation-in-part of Ser. No. 882,168, Dec. 7, 1978, abandoned. This application Feb. 28, 1980, Ser. No. 125,329

Int. Cl.[3] A45D *29/20*

U.S. Cl. 132—75 6 Claims

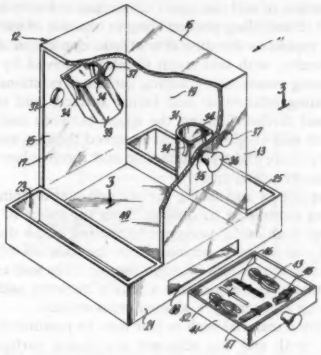
1. A device for dispensing nail polish and nail polish remover from their bottles without spillage, the device comprising:

(a) a rectangular housing having two opposing side walls, the remaining side thereof being opened to provide access to the interior of said housing,

(b) a base supporting said housing,

(c) a plurality of recepticles each recepticle being adapted to receive a bottle, the recepticles being pivotably mounted on the side walls, one side of each recepticle being flush with its respective side wall,

(d) a plurality of knobs for rotating said receptacles positioned on the exterior of the side walls and attached to the



receptacles by pivot pins, said knobs being located above the center of gravity of said receptacles,

(e) not more than two compartments within the base supporting said housing, the compartments having an open top and being juxtaposed adjacent to the open sides of the housing, and

(f) not more than two plastic inserts within the compartments adjacent to the base, said inserts being removable for cleaning ease.

4,359,061

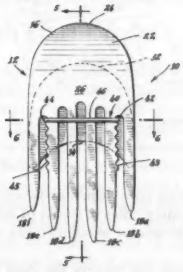
DEVICE FOR CLASPING HAIR

G. Craig Colclasure, 157 Peck Hill Rd., Woodbridge, Conn. 06525

Continuation of Ser. No. 24,619, Mar. 28, 1979. This application Feb. 27, 1981, Ser. No. 239,142

Int. Cl.[3] A45D *24/38*

U.S. Cl. 132—144 7 Claims



1. A device for clasping hair comprising:

a comb member including a base portion having length, width and thickness, said length and width of said base portion being greater than said thickness thereof and defining a facing surface of substantial area, said comb member further including a plurality of generally mutually parallel teeth extending from said base portion in the

direction of one of the major dimensions with surfaces of said teeth in continuous, generally coplanar relation to said facing surface; and

a clasp member including a clasp portion having length, width and thickness, said length and width of said clasp portion being greater than said thickness thereof and defining a clasping surface of substantial area, said clasp member further including means for slidably receiving and embracing at least one of said teeth by movement of said clasp member relatively to said comb member in the direction of said one major dimension, at least a substantial part of said clasp portion lying to one side of said embracing means in the direction of said one major dimension whereby, with said tooth slidably received by said embracing means, said clasping surface is positioned in confronting relation to said facing surface; said embracing means further limiting the space between said surfaces when said tooth is slidably received thereby and accordingly more tightly embracing said tooth when said surfaces are urged apart,

at least one of said facing surface and said clasping surface being contoured to diverge from the other of said surfaces, with said divergence increasing in the direction of said one major dimension from the location of said embracing means to a location remote from said embracing means, to thereby define a region between said surfaces having a generally V-shaped cross-section,

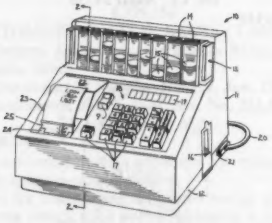
whereby a material such as hair may be positioned between said teeth and laid adjacent said facing surface of said comb member and thereafter said clasp member may be mounted on said comb member by slidably receiving said tooth in said embracing means until said clasping surface and said facing surface are in said confronting relation with said material confined therebetween in said region and further until said surfaces are urged apart by said material to cause the embrace of said tooth by said embracing means to tighten.

4,359,062

ELECTRONIC COIN DISPENSER

Richard P. Uecker, Juneau, Wis.; Stephen J. Horvath, Bensalem, Pa., and Francis C. Larkin, Trenton, N.J., assignors to Brandt, Inc., Watertown, Wis.

Filed Apr. 11, 1980, Ser. No. 139,635
Int. Cl.³ G07D 1/00
U.S. Cl. 133—2 **26 Claims**



1. A calculating coin dispenser which comprises:

means for holding coins in stacks of different denominations;

coin ejector means for selecting coins in individual stacks for ejection;

payment means for driving the coin ejector means to dispense selected coins;

head means with elements for forming alphanumeric characters across the width of a record-keeping tape;

head enable means electrically coupled to the head means for enabling selected elements in the head means;

keyboard input means for entering calculating and coin dispensing commands and operands associated therewith;

first means responsive to selected keyboard inputs for storing simple operands and performing calculations therewith to generate a total operand;

second means responsive to a selected keyboard command for generating output signals, which are coupled to the coin ejector means to select coins to be dispensed in the amount of a selected operand, and which are coupled to the payment means to effect payment;

third means responsive to selected keyboard commands for generating output signals which are coupled to the head means and to the head enable means to print alphanumeric characters on the tape, including simple operands and total operands generated in the first means; and

fourth means for signalling a preselected one of two limits for the amount to be dispensed;

wherein the keyboard input means includes a total key and a dispense key;

wherein the first means is responsive to the operation of the total key to calculate a total amount; and

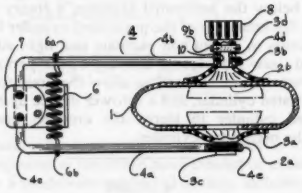
wherein the second means is coupled to the first means and is responsive to the limit signal from the fourth means and to the sequential operation of the total key and the dispense key to generate output signals to dispense the total amount up to the signalled limit.

4,359,063

SPRING-BIASED FLUSHING ACCESSORY FOR OUTBOARD MOTORS

Gordon R. Carlson, 10815 Sagetrail, Houston, Tex. 77089

Filed Feb. 6, 1981, Ser. No. 232,153
Int. Cl.³ B08B 9/00
U.S. Cl. 134—167 R **7 Claims**



1. A flushing system for outboard and stern-drive motors having an external motor housing which includes at least two water intake ports substantially spaced apart on opposite sides of said housing, said system comprising:

a pair of resilient sealing devices of material substantially impervious to water;

a U-shaped retainer having the free ends of its two legs comprising means respectively constructed and arranged to support and maintain said resilient sealing devices in substantially water-tight gripping relation against the respective outer faces of said housing in positions respectively disposed to substantially enclose the areas including said spaced apart water intake ports;

said U-shaped body being constructed and arranged to straddle said external motor housing between said spaced apart water intake ports;

at least one of said resilient sealing means being provided with a water-flow passage connectable to a source of water; and

means auxilliary to said U-shaped retainer for imposing a spring-bias between the legs of said U-shaped retainer whereby the opposite inner faces of said resilient sealing means tend to be urged toward one another against the force of said spring-bias.

4,359,064

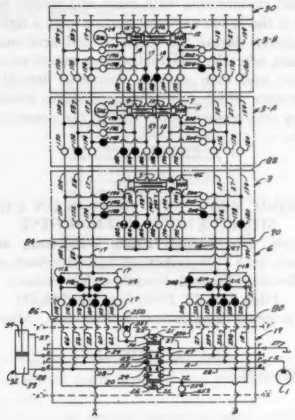
FLUID POWER CONTROL APPARATUS

Charles W. Kimble, 1805 Jackson Rd., Zanesville, Ohio 43701

Filed Jul. 24, 1980, Ser. No. 171,892

Int. Cl.³ F15B *13/02*

U.S. Cl. 137—269 **23 Claims**



5. A fluid power control apparatus fabricated from a plurality of standardized modules selectively adaptable to perform a plurality of valving functions, said control apparatus comprising a standard power flow valve module including oppositely facing first and second standard power flow interfaces adapted to register with conforming standard power flow interfaces of subsequent standard power flow valve modules assembled in series relationship therewith, said power flow module including a standard signal flow interface; four standard duct-forming power flow passages extending between said power flow interfaces; a shiftable power flow element mounted in the power flow module for controlling flow between saic power flow passages, said power flow element including first and second end surfaces, two standard duct-forming signal flow passages each of which extends between said power flow interfaces and said signal flow interface and communicates with a respective end surface of the power flow element; a signal flow module mounted on said power flow valve module and including at least one standard signal flow interface of the power flow valve module whereby the signal flow module receives fluid signal from said power flow ducts and delivers fluid signals to said signal flow passages and end surfaces.

4,359,065

VALVE

Eduardo J. A. Fonseca, Residencias Veracruz - Apto. 1B, Urb. Las Mercedes, Avda. Veracruz

Filed Apr. 3, 1979, Ser. No. 26,651

Int. Cl.³ F16K *31/34*

U.S. Cl. 137—413 **9 Claims**

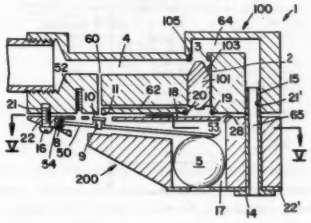
1. In combination with an atmospherically vented tank, a valve comprising:

an upper housing adapted for communication with a source of pressurized fluid, said housing defining a vertically-oriented chamber, first passage means for communicating said pressurized fluid to said vertically-oriented chamber, second passage means for communicating fluid from the upper end of said vertically-oriented chamber, and third relatively restricted passage means for bypassing said first passage means and for communicating said pressurized fluid to the bottom end of said vertically-oriented chamber, said third passage means being formed integrally in the housing;

a piston having a specific gravity less than the specific gravity of the pressurized fluid, said piston being slidably positioned in said vertically-oriented chamber, said piston further defining at its upper end a first surface and further wherein the vertically-oriented chamber defines a valve seat at its upper end, said first surface being adapted for seating engagement with said valve seat to shut off flow between the first passage and the second passage;

a lower housing releasably coupled to said upper housing, said upper housing further defining a fourth passage means for communicating said third passage means with said lower housing;

said second passage means including threaded coupling means for fixing said lower housing to said upper housing



and for communicating fluid from said second passage means through said lower housing to said atmospherically-vented tank;

a lever arm having a first end and a second end, said lever arm being mounted in said lower housing for rotational movement about said first end;

a valve plug affixed to said lever arm and adapted to close said fourth passage means and to vent said fourth passage means in response to rotational movement of the lever arm; and

activating means for rotatably moving the lever arm in response to the level of the fluid in the tank, said piston adapted to shut off the flow between the first passage means and the second passage means.

4,359,066

PIPE COUPLING

Charles R. Hunt, Peterlee, England, assignor to Kefco Precision Engineers (Peterlee) Ltd. and Alpha Process Controls (West Yorkshire) Ltd., both of, England

Filed Jan. 8, 1980, Ser. No. 110,306

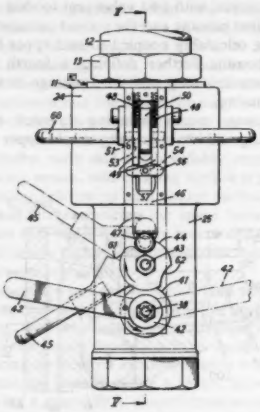
Claims priority, application United Kingdom, Jan. 11, 1979, 7901147

Int. Cl.³ F16L *37/28*

U.S. Cl. 137—614.06 **17 Claims**

1. A dry-break pipe coupling comprising a spigot member and a complementary socket member to be attached to respective ends of two pipes to be coupled, said spigot member having a mouth formed with forwardly-facing and rearwardly-facing annular valve faces and said socket member having inner and outer forwardly-facing annular valve seats, a flat sealing ring at said outer valve seat, a valve member carried by said spigot member and spring-loaded towards the rearward valve face of said mouth to close said mouth, a valve member carried by said socket member, fastening means to urge the forward valve face of the mouth of the spigot member into and secure said face in sealing engagement with the flat sealing ring at said outer valve seat of the socket member, the radially inward edge of the outer valve seat and flat sealing ring being coextensive with the inward edge of the forward valve face, operating means operable separately from said fastening means to urge the socket valve member into sealing engagement with the inner valve seat of the socket member and alternatively to move the socket valve member forwardly to engage and move

the spigot valve member out of engagement with the rearward valve face of the mouth and so open the valves, first interlocking means to permit actuation of said fastening means only when the spigot member is substantially fully inserted into the



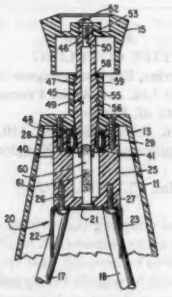
socket member, and second interlocking means to permit actuation of said operating means only when said spigot and socket members are secured together in sealing engagement by said fastening means.

4,359,067

SINGLE CONTROL PROPORTIONING VALVE FOR LIQUIDS

George S. Cole, 17 Mile Dr. at Midway Pt., Pebble Beach, Calif. 93953

Filed Aug. 7, 1980, Ser. No. 176,118
Int. Cl.³ F16K *19/00, 31/524*
U.S. Cl. 137—636.4 **6 Claims**



1. A single control proportioning valve for liquids such as hot and cold water, comprising

a support;

a pair of spaced resilient tubes, corresponding ends of said tubes in communication with the discharge ends of a pair of pressurized liquid supply pipes connected to said support;

a spout on said support communicating with the other ends of said resilient tubes;

an elongated control cam extending between and in engagement with said resilient tubes to vary the internal cross sectional areas of said tubes, said cam rotatable and axially movable and having a cylindrical valve-closing length and an eccentric conical valve-opening length that controls rate of flow and proportioning; and

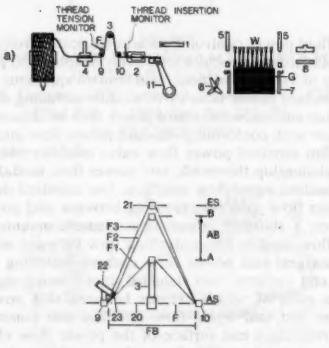
dual bearing means on said support for said cam at upper and lower end portions of said cam, said dual bearing means on said support include a cylindrical sleeve engaging a cylindrical length on said cam at the upper cam end portion and cooperating with male and female bearing elements at the lower cam end portion with a tight sliding fit throughout, during the rotatable and axial movement of said cam, whereby said dual bearing means are effective to stabilize said cam against disruptive lateral and axial movements which result from pressures exerted on said cam by said resilient tubes due to the pressurized liquids therein.

4,359,068

ELECTRONIC WEFT STOP MOTION ON A GRIPPER SHUTTLE WEAVING MACHINE

Erich Loepfe, Pfaffhausen; Erich Weidmann, and Walter Schümperli, both of Wetzikon, all of Switzerland, assignors to Loepfe Brothers Limited, Wetzikon, Switzerland

Filed Apr. 28, 1980, Ser. No. 144,231
Claims priority, application Switzerland, May 4, 1979, 4188/79
Int. Cl.³ D03D *51/34*
U.S. Cl. 139—370.2 **4 Claims**



1. In combination with a gripper shuttle weaving machine provided with a shuttle picking device, shuttle catching means including shuttle braking and resetting means, thread tensioning means in advance of the shuttle picking device for laterally deflecting the weft yarn during the action of the shuttle resetting means, an electronic weft stop motion which comprises:

tactile thread sensing means located at the region of the thread tensioning means such as to be frictionally contacted by the tensioned weft yarn only upon the lateral deflection thereof for furnishing an electrical thread sensing signal indicative of correct weft insertion; and

an electronic signal circuit connected to the tactile thread sensing means for producing a signal stopping the weaving machine in the absence of any thread sensing signal during the lateral deflecting of the weft yarn.

4,359,069

LOW DENSITY MULTILAYER PAPERMAKING FABRIC

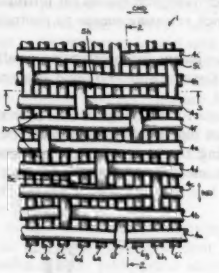
Edward R. Hahn, Neenah, Wis., assignor to Albany International Corp., Albany, N.Y.

Filed Aug. 28, 1980, Ser. No. 182,090
Int. Cl.³ D03D *15/00;* **D21F** *1/10;* **B01D** *39/10*
U.S. Cl. 139—425 A **15 Claims**

1. In a multilayer papermaking fabric having a single layer thread system with threads extending in one direction of the

fabric and a multiple layer thread system with threads extending in a direction normal to the threads of the single layer system, the combination of:

threads in an upper layer of said multiple layer thread system being grouped with threads in a lower layer of said multiple layer thread system, with threads of a group being stacked one above the other;



threads of said single layer thread system interweaving with the threads of each layer of the multiple layer thread system; and

the projected open area of the fabric being within 13 to 25 percent of the total fabric area.

4,359,070

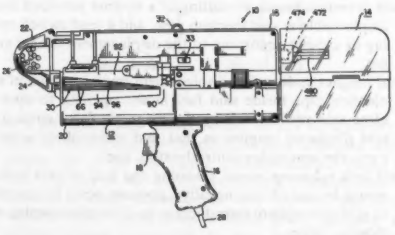
BUNDLING TIE APPLYING KIT

Laszlo Hidassy, Jamesburg, and Louis A. Netta, North Brunswick, both of N.J., assignors to Thomas & Betts Corporation, Raritan, N.J.

Filed Nov. 3, 1980, Ser. No. 203,688

Int. Cl.³ B21F *9/02*

U.S. Cl. 140—93 A **28 Claims**



1. A kit of parts for use in the application of a bundling tie to articles to be bundled, comprising:

(a) a series of interconnected bundling ties, said ties being of the type having a head portion and an elongate, flexible strap portion extending therefrom, adjacent head portions being connected by a web, said interconnected ties extending longitudinally along an axis and in succession in a helical path about said axis; and,

(b) an apparatus having means adapted for receiving ties individually in succession from said series of interconnected ties extending in said helical path, said apparatus including means adapted for cutting a web between adjacent heads to provide a succession of separated, individual ties, means for positioning an individual tie in a closed loop about said articles to be bundled and means for tensioning said tie about said articles.

4,359,071

AUTOMATIC WATER REFILLING OF STORAGE BATTERIES

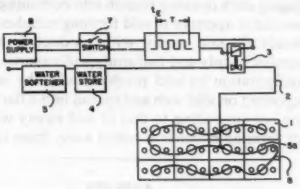
Rainer-Lionel d'Arcy, Iserlohn-Letmathe, and Hartmut Schmidt, Gevelsberg, both of Fed. Rep. of Germany, assignors to Varta Batterie Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Filed Apr. 1, 1980, Ser. No. 136,311

Claims priority, application Fed. Rep. of Germany, Apr. 2, 1979, 2913191

Int. Cl.³ B65B *3/36*

U.S. Cl. 141—1 **8 Claims**



1. A method for automatically refilling with water storage battery having individual cells which are respectively provided with water refill plugs containing float-actuated valves and which are connected to a common water supply conduit, said method comprising

actuating an additional valve provided in the common water supply conduit repeatedly in impulse-like manner during the refilling process whereby stitching of said float actuated valves in said water refill plugs in precluded.

4,359,072

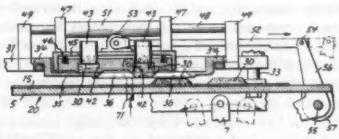
PRODUCT SHAPING MECHANISM FOR HORIZONTAL POUCH-MAKING MACHINES

Robert F. Bardsley, Harrington Park, N.J., and William M. Marks, Irvington, N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Filed Feb. 4, 1980, Ser. No. 118,246

Int. Cl.³ B65B *1/24*

U.S. Cl. 141—71 **10 Claims**



1. In a packaging machine of the class described having means for transporting a web of flexible packaging material in a horizontal plane through a succession of web feeding cycles, and filler means disposed above said web for discharging measured amounts of a granular free flowing product for deposit on a said web each web feeding cycle, lay down means for forming each deposit of said product into a predetermined shape and depositing it in a pre-determined area of said web each web feeding cycle, said lay down means comprising:

(a) a product forming member disposed above said web and having apertures therethrough of a configuration corresponding to that of said pre-determined shape, said member being vertically movable into and away from engagement with said web defining therewith at each aperture therein an open flat-top cavity for shaping and positioning the free flowing product delivered thereto, said cavity being defined by the upwardly extending side walls of said aperture within said product forming member and the top surface of said web when said product forming member is

vertically moved into engagement with said web so as to define the bottom of said cavity, and

(b) a product deposit member supported on said forming member in slidable relation thereto between a product receiving position and a product discharging position, said deposit member being formed with an opening therethrough associated with each aperture of said forming member, each said opening being in communication with said filler and adapted to receive a measured amount of product therefrom when in its product receiving position and sealed off from its associated aperture, said deposit member when moved into its product discharging position placing each opening therein into communication with the associated aperture in said forming member, so as to completely fill said cavity with product from said deposit member evenly and uniformly and imparting a flat topped configuration to said product, whereby said product is deposited on said web and spread into a flat top configuration corresponding to that of said cavity when said product forming member is raised away from the web.

4,359,073

MOBILE STATION FOR DISTRIBUTING BEVERAGES

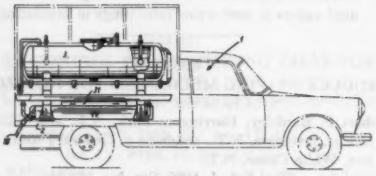
William P. de Stoutz, Chateau de Larringes sur Evian, 74500 Evian, Haute Savoie, France

Filed Jul. 22, 1980, Ser. No. 171,181

Claims priority, application Switzerland, Aug. 13, 1979, 7393/79

Int. Cl.³ B65B *3/04*; B67C *1/00*

U.S. Cl. 141—89 **6 Claims**



1. Mobile station for distributing beverages, comprising a self-propelled automotive vehicle carrying at least two reservoirs to receive at least one beverage to be distributed, a sterilized water reservoir, said at least two beverage reservoirs being each connected to several distributors dispensing at each actuation a predetermined quantity of beverage, a first trough located below the beverage distributors, connected to a recovery vessel, the sterilized water reservoir feeding at least one spraying and sterilizing device for a receptacle which has contained the beverage, and a second trough located under the spraying device and connected to the same said recovery vessel as said first trough.

4,359,074

FUEL SUPPLYING APPARATUS

Eisuke Maruyama, Kawasaki; Hiromitsu Kobayashi, Yokohama; Masakazu Mitsuhashi, Kawasaki; Hiromichi Takeuchi, Yokohama; Yoshiki Futamura, Funabashi, and Naohito Suzuki, Kawasaki, all of Japan, assignors to Tokico Ltd., Kanagawa and Tokico Yuki Ltd., Tokyo, both of, Japan

Filed Oct. 17, 1980, Ser. No. 198,245

Claims priority, application Japan, Oct. 19, 1979, 54/135029

Int. Cl.³ B65B *3/04*

U.S. Cl. 141—94 **5 Claims**

1. A fuel supplying apparatus comprising:

a fuel supplying nozzle having an ejection pipe for ejecting fuel and a passage for supplying fuel to said ejection pipe;

an opening and closing valve means provided in said supply passage;

a nozzle lever for opening said opening and closing valve;

locking means for locking said opening and closing valve in an open state;

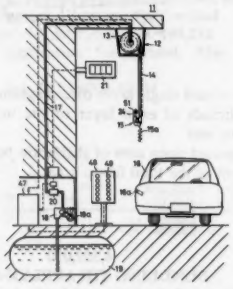
negative pressure generating means for generating negative pressure upon supply of said fuel outside through said ejection pipe;

lock releasing means for releasing the lock of said locking means by the introduction of said negative pressure generated by said negative pressure generating means;

atmosphere introduction means for introducing atmosphere into said lock releasing means to neutralize said negative pressure;

solenoid valve means for interrupting or allowing the introduction of the atmosphere by said atmosphere introducing means; and

detection means for enabling the detection of the insertion of said ejection pipe inside a fuel intake opening of a vehicle and allowing the atmosphere introduction by said solenoid valve means, and for interrupting the atmosphere



introduction by said solenoid valve means when said ejection pipe is not inserted inside said fuel intake opening,

said opening and closing valve means, locking means, negative pressure generating means, locking releasing means, atmosphere introducing means and solenoid valve means accommodated within said fuel supplying nozzle,

said detection means consisting of a magnet provided freely displaceable at said ejection pipe, and a reed switch opening or closing according to the displacement of said magnet,

said magnet undergoing displacement upon insertion of said ejection pipe inside said fuel intake opening to open or close said reed switch by the magnetic force emitted by said displaced magnet so that said solenoid valve interrupts the atmosphere introduction, and

said lock releasing means releasing the lock of said locking means by use of said negative pressure upon interruption of said atmosphere introduction to close said opening and closing valve.

4,359,075

MULTIPLE POSITION AND WORK STATION FOR BATTERY FABRICATION

William Eberle, and Kelly L. Eberle, both of Reading, Pa., assignors to General Battery Corporation, Reading, Pa.

Filed May 12, 1980, Ser. No. 149,268

Int. Cl.³ B65B *3/04*

U.S. Cl. 141—177 **13 Claims**

13. An apparatus for depositing preselected aliquot amounts of fluid into each of a plurality of cells within a multicelled storage battery comprising:

a fixed structural frame;

a work station assembly, said work station being vertically movable on said frame so that it can be positioned above said battery while it is being filled and further comprising a plurality of horizontally movable work station blocks,

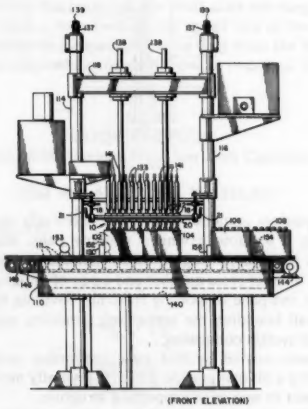
each of which being slideably mounted within said work station and adapted to be positioned over a fill hole within said battery and further containing a nozzle adapted to conduct a mixture of sulfuric acid and water into said fill hole, said nozzle having a reduced outer end so that a turbulent free flow of air out of said cells may be achieved as they are being filled;

a supply tank to contain said acid mixture;

ladling means mounted for periodic reciprocal movements between a lower position within said supply tank and an upper position above said battery, said ladling means being adapted to be immersed in said tank to collect said precollected amount of said mixture from said tank in said lower position and being raised from said tank into said upper position wherein said acid mixture drains from said ladling means into said battery;

means disposed within said ladling means for dividing said fluid from said tank into a plurality of said preselected aliquot portions, one for each cell in said battery, upon movement of said ladling means from said lower position to said upper position;

fluid transfer means periodically emptying said ladling means and for allowing the independent gravitationally induced transfer of said preselected aliquot portions of fluid into each of said plurality of cells as said lading means moves into said upper position;



(FRONT ELEVATION)

means for tilting said lading means to any of a variety of predetermined angles whereby overflow from said ladling means caused by said tilting correspondingly varies the fluid content of said lading means and consequently, the amount of fluid deposited in said battery, said tilting means further comprising a fixed scale template and pointer means connected to said ladling means said pointer means adapted to pivot with said tilting means and to overlay said template thereby indicating the degree of said ladling means and the quantity of fluid therein;

transport means adapted to carry said battery into said apparatus for acid filling and after said filling is completed, being adapted to further transport the said batteries out of said apparatus for further processing, said apparatus further comprising a plurality of sensing devices and control means adapted to determine that the requisite number of batteries being filled has been transported into said apparatus and is properly located in said apparatus for further processing, said position being controlled by the location of the stop which acts to prevent the batteries entering the station from leaving until said filling operation is complete, second sensing means adapted to detect the exit of said filled batteries after a filling cycle is complete, said sensing means cooperating with a third sensing means adapted to determine that a sufficient number of batteries for the next filling cycle is available and to control an entry gate which acts to prevent more than the requisite number of batteries from entering the apparatus prior to the start of a filling action.

4,359,076

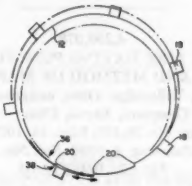
ADJUSTABLE BASKET FILLER, BLANK AND METHOD OF MAKING

Garrett J. Kyte, SRI 32A Smith Island, Ewell, Md. 21824

Filed Nov. 18, 1980, Ser. No. 207,874

Int. Cl.³ B65B *5/00;* **B65D** *5/44, 25/20*

U.S. Cl. 141—391 **6 Claims**



1. A blank for making a size adjustable marine life basket filler comprising:

an elongated member;

one end of said member having a series of closely spaced stepped shoulders formed therein each traversely to the length thereof;

at least one slot provided in each stepped shoulder;

the other end of said member having at least one projection extending therefrom for complementary engagement with a shoulder slot for the purpose of securing the respective ends of said elongated member together during assembly of the overall basket filler;

and one elongated side edge provided with slits extending from the outer edge inwardly thereof for providing support tabs for supportive engagement with a basket opening edge after assembly of the overall bsket filler.

4,359,077

PROCESS AND APPARATUS FOR FORMING A PROFILED TREAD SURFACE ON A SKI

Adolf Staufer, Ried im Innkreis, Austria, assignor to Fischer Gesellschaft m.b.H., Ried im Innkreis, Austria

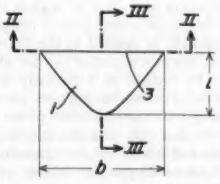
Division of Ser. No. 36,807, May 7, 1979, Pat. No. 4,268,059.

This application Feb. 3, 1981, Ser. No. 231,370

Claims priority, application Austria, Jul. 20, 1978, 5280/78; Nov. 30, 1978, 8556/78

Int. Cl.³ B27M *1/00*

U.S. Cl. 144—371 **3 Claims**



1. A process of forming a profiled tread surface on a ski, comprising repeatedly cutting into said tread surface with a cutting tool to form said surface with successive recesses which comprise sawtooth-shaped step ramps, which gently merge into the tread surface toward the rear end of the ski and are terminated by a steep end face toward the forward end of

the ski, repeatedly moving said cutting tool relative to said ski between successive cutting operations in respective steps in a transverse direction which is transverse to the longitudinal direction of said surface so that the latter is formed with successive recesses in rows which extend in said transverse direction, and after the cutting of the recesses of at least one row, moving said cutting tool relative to said ski in a step in said longitudinal direction by a distance which is at least as large as the width of one of said rows, whereafter at least one additional row of said recesses is cut, the recesses of adjacent rows being staggered in said transverse direction by a fractional part of the length of each of said steps performed in said transverse direction, and adjacent rows overlapping in said longitudinal direction by a fractional part of the length of each of said steps performed in said longitudinal direction.

4,359,078

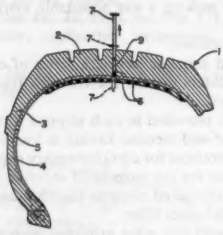
PNEUMATIC TIRE HAVING PUNCTURE SEALING FEATURE AND METHOD OF MAKING SAME

William E. Egan, Tallmadge, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 20,291, Mar. 14, 1979, abandoned. This application Aug. 4, 1980, Ser. No. 174,967

Int. Cl.³ B60C *21/08*

U.S. Cl. 152—347 **2 Claims**



1. A method of preparing a pneumatic tire having a puncture sealing feature by applying a sealant composite to the inner surface of a cured rubber tire, the improvement which comprises applying the composite sealant to the inner surface of the cured tire in the form of a relatively narrow individual strip, having dimensional stability and resistance to flow, adhered circumferentially around the inner surface of the crown portion of the tire in a spiral fashion with sufficient revolutions to achieve a desired width of the sealant composite, utilizing the sequential steps of (A) optionally cleaning or preparing the inner surface of the tire by (i) cleaning with an aqueous detergent solution or hydrocarbon solvent and allowing it to dry and/or (ii) buffing or abrading the surface to roughen it, (B) optionally heating the tire to a temperature in the range of about 40° C. to about 80° C., (C) optionally applying a thin coating of a cement to the prepared inner tire surface and (D) applying and adhering said strip of sealant composite to the inner surface of the tire or to the optional cement coat; wherein said sealant composite, as applied to the inner surface of said cured rubber tire, consists essentially of an admixture of

(A) 100 parts by weight of a partially crosslinked butyl rubber, said butyl rubber having been partially crosslinked prior to mixing with the remainder of the following ingredients (B), (C) and (D), and characterized by being partially crosslinked to an extent characterized by being about 20 to about 80 percent soluble in cyclohexane at about 80° C. and having a molecular weight in the range of about 200,000 to about 400,000;

(B) about 25 to about 150 parts by weight (i) oil selected from at least one of paraffinic, naphthenic, or aromatic oils and (ii) polyisobutylene characterized by being a semi-solid at 40° C.;

(C) about 2 to about 50 parts by weight tackifying resin for said rubber having a softening point in the range of about 80° C. to about 120° C. selected from at least one of the group consisting of thermoplastic olefin/diolefin polymerizate resins and phenolformaldehyde resins;

(D) about 10 to about 150 parts by weight of carbon black having a particulate size in the range of about 200 to about 400 U.S. Standard Sieve Size.

2. The pneumatic tire having a puncture sealing feature prepared according to the method of claim 1.

4,359,079

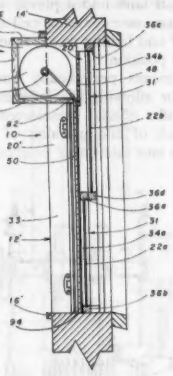
WINDOW INSULATION SYSTEM

Billy M. Bledsoe, Rte. 2, Fulton Rd., Corryton, Tenn. 37721

Filed Nov. 26, 1979, Ser. No. 97,530

Int. Cl.³ E06B *9/08, 9/20*

U.S. Cl. 160—26 **5 Claims**



1. A window insulation system for selectively covering and insulating a window having a window pane, said window having a pane supporting structure including an upper cross member, a lower cross member and a pair of upright members, said pane and pane supporting structure covering the opening in the wall bounding the supporting structure, said window insulation system comprising:

a valance carried by said pane supporting structure and having a pivotal portion which is pivotally mounted with respect to said pane supporting structure;

a shade rod supported at its opposite ends by said pane supporting structure; and

an insulated shade mounted on said shade rod, the width of said shade being such that its marginal edges overlap a portion of the upright window pane supporting structure when the shade is drawn, wherein said insulating shade includes an insulating material sheet sandwiched between front and back cover sheets and wherein the insulating material sheet is of a length less than the length of the cover sheets such that one edge of the insulating material is spaced from one edge of said shade secured to said shade rod by a preselected distance to reduce the effective diameter of said shade when rolled upon said shade rod.

4,359,080

HANGER FOR FOLDING PARTITION

Robert Brydolf, Pasadena, Calif., assignor to Acme General Corporation, San Dimas, Calif.

Filed Sep. 29, 1980, Ser. No. 192,065

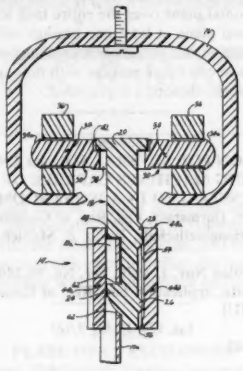
Int. Cl.³ E05D *11/26*

U.S. Cl. 160—199 **14 Claims**

1. A hanger for suspending a slat from an overhead track for movement along the length of the track comprising:

a shaft having a head at its upper end;

a tang extending laterally from a side of the shaft at a location on the shaft vertically spaced apart from its head for engaging a hole through the upper end of such a slat;



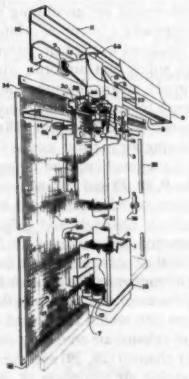
clip means mounted on the shaft capable of slidable movement along the length of the shaft after the tang has engaged such a hole through the upper end of the slat for preventing disengagement of the tang from the hole; and means for suspending the shaft from an overhead track.

4,359,081

DOOR BARRIERS

John Brower, 29282 Sonoma Way, San Juan Capistrano, Calif. 92675

Filed Nov. 6, 1981, Ser. No. 318,949
Int. Cl.³ A47G 5/02
U.S. Cl. 160—243 **9 Claims**



1. A horizontally traversing door barrier for covering and uncovering a doorway, said barrier comprising;

a flexible material having one vertical end attached to a side of said doorway for its full height,

a cylindrical shaped vertical spool with a length approximately that of said doorway's height and upon which said material is rolled and unrolled,

a carrier member which rollably engages and horizontally traverses upon a main track guide horizontally mounted above said doorway,

a vertical shaft rotationally engaging said member and pivotably engaging the upper end of said spool,

a coiled torsion spring circumscribing and attached to said shaft for applying continuous torque to said spool,

a hollow rectangular shaped housing which circumscribes said spool and rolled material for its total length and which is secured to said member,

a lengthwise slot within said member through which said material freely traverses, and

tension guides at the lower end of said member for rollable engagement of said spool

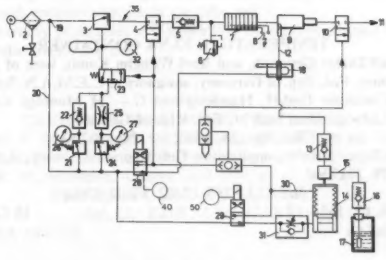
such that as said member, spool and housing horizontally traverse upon said guide, said material is rolled or unrolled upon said spool and respectively uncovers or covers said doorway.

4,359,082

METHOD AND APPARATUS FOR HARDENING MOLD PARTS MADE OF SAND FOR MAKING METAL CASTINGS

Horst-Werner Michel, Jahnstrasse 25, D-7707 Engen, Fed. Rep. of Germany

Continuation of Ser. No. 928,901, Jul. 28, 1979, abandoned. This application Jun. 2, 1980, Ser. No. 155,526
Int. Cl.³ B22C 9/12
U.S. Cl. 164—16 **7 Claims**

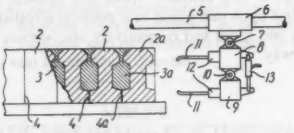


1. A method for hardening mold parts to be used for making metal castings which parts are made from a mixture of sand and a binding agent capable of being catalyst hardened, the method characterized by an operating cycle having a rest phase and a working phase including the steps of providing a source of compressed air, providing a passage connecting said source to the mold part, during said rest phase filling said passage with air at one pressure, isolating a portion of the passage from both the compressed air source and the mold part with air at the one atmospheric pressure trapped therein, introducing under pressure in liquid phase a predetermined quantity of a vaporizable catalyst into said portion, heating the catalyst while isolated in said portion to the vaporization temperature of the catalyst and vaporizing all the catalyst to form an air/-catalyst mixture; during said working phase opening said portion to the mold part and said compressed air source to said portion and releasing a quantity of catalyst-free compressed air into and through said portion at a pressure higher than that of the air/catalyst mix in said passage to force the air/catalyst mix as a charge into the mold part and thereafter passing an additional quantity of the catalyst-free compressed air through said portion and the mold part to clear both of residual catalyst, terminating the flow of compressed air through said passage and reinstating said rest phase.

4,359,083
APPARATUS FOR SEPARATING CASTINGS FROM MOULDS OF SAND OR SIMILAR MATERIAL

Ole A. Jacobsen, Copenhagen, Denmark, assignor to Dansk Industri Syndikat A/S, Herlev, Denmark

Filed Nov. 4, 1980, Ser. No. 203,904
Claims priority, application Denmark, Nov. 15, 1979, 4845/79
Int. Cl.³ B22D *29/04*
U.S. Cl. 164—404 **6 Claims**

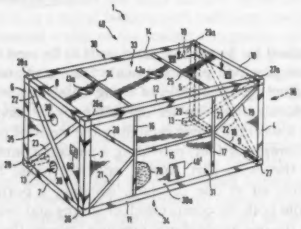


1. An apparatus for separating castings from flaskless moulds of sand or similar material located at the end of a guide track which is used for guiding the intermittent advance of said flaskless moulds with its enclosed castings to a knocking-out station, comprising a number of extractors located at the vicinity of said guide track which are movable from a position of rest to a grasping position relative to the outermost casting in the row of said flaskless moulds and are thereafter retractable to the position of rest taking with them the casting mainly without adherent mould sand, wherein the extractors form a tool having at least two sets of claws equipped with vibrators and having such length and positions that on penetration into the mould sand surrounding the casting they can be caused to enclose the casting, wherein at least one of said claws is movable relative to the other for grasping contact with the casting.

4,359,084
TEMPERATURE TANK CONTAINER

Wulf-Dieter Geverath, and Karl-Wilhelm Kundt, both of Hamburg, Fed. Rep. of Germany, assignors to C.E.M.A.N. Special-Container GmbH, Hamburg and G+. H Montage GmbH, Ludwigshafen, both of, Fed. Rep. of Germany

Filed Apr. 28, 1980, Ser. No. 143,943
Claims priority, application Fed. Rep. of Germany, Apr. 28, 1979, 2917364
Int. Cl.³ F28F *27/02;* **F25D** *17/04*
U.S. Cl. 165—12 **19 Claims**

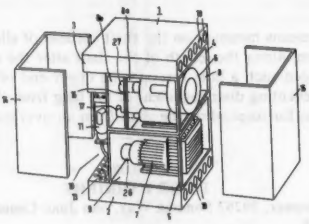


1. Temperable tank container comprising:
a support frame including a heat-insulating jacket at its outer side and having standardised external dimensions of a container for supporting an inner tank so that the outer wall of the tank is spaced from said heat-insulating jacket to provide passages between the tank wall and heat-insulating jacket for conducting a heat transfer medium in forced circulation along the tank wall serving as heat-exchange surface,
said heat-insulating jacket being disposed to encompass said tank and being spaced at end walls of the support frame from the tank wall to form further passages connected in such a manner with the first mentioned passages that said medium sweeps round the entire free outer surface of the tank wall,
characterised in that the intermediate space between the heat-insulating jacket and the tank wall is divided at least in a horizontal plane over the entire tank length, and that beneath said plane at least one passage with the flow of said medium in one direction is provided and above said plane at least one other passage with flow of said medium in the opposite direction is provided.

4,359,085
INSTALLATION FOR SEVERAL SOUND AND/OR HEAT EMITTING MACHINES CAPABLE OF BEING INSTALLED IN A WORKROOM

Lothar Mueller, Darmstadt, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Nov. 1, 1979, Ser. No. 90,356
Claims priority, application Fed. Rep. of Germany, Nov. 24, 1978, 7834992[U]
Int. Cl.³ F24H *3/00*
U.S. Cl. 165—47 **11 Claims**



1. An installation for several sound and/or heat emitting machines to be installed in a workroom, in particular, vacuum generating and compressed air generating electric machines, said installation comprising a common cabinet-like housing (1) for the machines, insulated toward the exterior against sound conducted through solids and airborne sound, said housing having fresh air supply means for supplying fresh air to the machines comprising a fresh air inlet (18) and fresh air channels (25, 10, 26, 27), connected via said inlet (18) with exterior air, and said housing having air exhaust means for discharging air from the vicinity of the machines and comprising exhaust air confining means (8*a*, 9, 8*b*, 28 and 29) and a common outlet (19) disposed at a location which is arranged removed from the inlet (18), the fresh air channels and exhaust air confining means being constructed and arranged so that the air is deflected many times in the course of its flow from the inlet to the outlet, the housing having mutually separate housing chambers (8, 9) for receiving the machines, which at the same time form exhaust air chambers into which the heated exhaust air of the machines flows, said exhaust air confining means comprising a common exhaust air channel (28, 29) and the exhaust air chambers (8, 9), said exhaust air chambers (8, 9) each supplying exhaust air to the common exhaust air channel (28, 29).

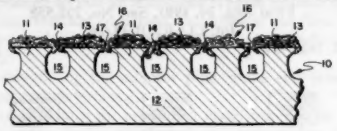
4,359,086
HEAT EXCHANGE SURFACE WITH POROUS COATING AND SUBSURFACE CAVITIES

Duane F. Sanborn, La Crosse; John L. M. Holman, Onalaska, and Chester D. Ware, La Crosse, all of Wis., assignors to The Trane Company, La Crosse, Wis.

Filed May 18, 1981, Ser. No. 264,519
Int. Cl.³ F28F *13/18*
U.S. Cl. 165—133 **10 Claims**

1. A heat exchange surface comprising means for vaporizing

a liquid, said means including continuous subsurface cavities formed in a metallic surface, said cavities being generally abridged where they are open onto the exterior of the metallic surface, by a porous open-celled coating deposited thereon, except at random points at which the cavities are directly open



to the liquid said porous coating providing nucleate boiling cavities by its open-cell structure and its random open points in combination with the subsurface cavities, and thereby adapted to provide improved efficiency in boiling the liquid which is in fluid communication with the subsurface cavities.

4,359,087

PLATE HEAT EXCHANGER

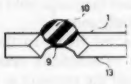
Börje Johansson, Helsingborg, Sweden, assignor to Alfa-Laval AB, Tumba, Sweden

Filed Dec. 1, 1980, Ser. No. 211,909

Claims priority, application Fed. Rep. of Germany, Dec. 3, 1979, 2948586

Int. Cl.³ F28F *3/10*

U.S. Cl. 165—167 **5 Claims**



1. In the plate heat exchanger, the combination of an assembly of heat exchanger plates disposed in substantially parallel relation to form a series of interspaces, one said interspace being provided between each pair of adjacent plates, gasket means sealing off each second plate interspace from the surrounding atmosphere along the periphery of the adjacent plates forming said second interspace, and permanent joints sealing off the other interspaces from the surrounding atmosphere and located between the adjacent plates forming said other interspaces, each plate having a heat exchanging surface and pressed corrugations in said surface, each plate also having pressed grooves around said surface for receiving said gasket means, each plate being provided with inlet and outlet ports for two heat exchanging media, said permanent joints being formed along abutting bottoms of said pressed grooves of the respective adjacent plates, the seals formed by the permanent joints and the seals formed by the gasket means being disposed in substantially aligned relation across the plate heat exchanger.

4,359,088

STEAM GENERATOR TUBE SUPPORTS

Felix S. Jabsen, Lynchburg, Va., assignor to The Babcock & Wilcox Company, New Orleans, La.

Filed Nov. 21, 1980, Ser. No. 209,085

Int. Cl.³ F28F *9/00*

U.S. Cl. 165—172 **7 Claims**

1. A tube support structure for an equilateral triangular array of generally parallel tubes comprising:

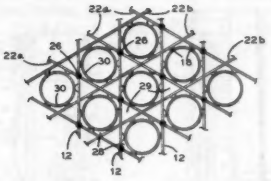
a plurality of mutually parallel first strips each extending in a first direction generally perpendicular to the tubes and between a corresponding pair of rows of tubes of the array;

a plurality of mutually parallel second strips each extending in a second direction generally perpendicular to the tubes and between a corresponding pair of rows of tubes of the array;

a plurality of mutually parallel third strips each extending in a third direction generally perpendicular to the tubes and between a corresponding pair of rows of tubes of the array;

said first direction, said second direction, and said third direction, each being oriented generally sixty degrees from the other two;

each of said plurality of second strips and said plurality of third strips having a plurality of slots formed on one edge thereof;



each of said plurality of first strips having a plurality of slots formed on both edges thereof;

said plurality of first strips being slottingly engaged with and affixed to said plurality of second strips at one edge of said plurality of first strips and being slottingly engaged with and affixed to said plurality of third strips at the other edge of said plurality of first strips thereby forming a multiplicity of hexagonal cells within the tube support each encompassing a single tube and

a plurality of dimples in the plurality of strips to contact the tube within the cell.

4,359,089

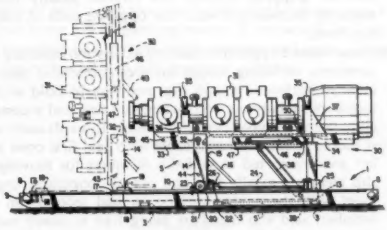
CARRIER FOR BLOWOUT PREVENTER

Ronald A. Strate; Russell V. Bills, both of 1001, 500 4th Ave. SW., Calgary, Alberta T2P 2V6, and James W. M. Anderson, R.R. #1, Mundare, Alberta, T0B 3H0, all of Canada

Filed Dec. 29, 1980, Ser. No. 220,317

Int. Cl.³ E21B *33/06, 41/00*

U.S. Cl. 166—79 **6 Claims**



1. A carrier for a blowout preventer comprising frame means including skid means permitting sliding of said frame means into and out of close proximity to a well; roller means; carriage means movably mounted on said roller means for movement of said carriage means toward and away from said well when said frame means is in close proximity to the well; first drive means for moving said carriage means along said frame means; cradle means pivotally mounted on said carriage means for carrying a blowout preventer in the horizontal position; second drive means for rotating said cradle means with respect to said carriage means to move the blowout pre-

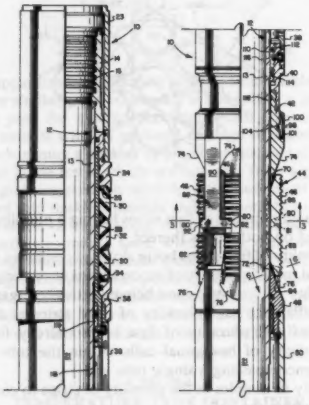
venter between the horizontal and vertical positions; slide means for carrying the blowout preventer on the cradle means; and third drive means for moving said slide means relative to said cradle means, whereby the blowout preventer can be moved vertically into and out of well engaging position.

4,359,090

ANCHORING MECHANISM FOR WELL PACKER

Mike A. Luke, Houston, Tex., assignor to Baker International Corporation, Orange, Calif.

Filed Aug. 31, 1981, Ser. No. 297,539
Int. Cl.³ E21B *33/128, 33/129*
U.S. Cl. 166—217 **19 Claims**



19. In an apparatus adapted to be anchored within a well conduit and the like, a tubular mandrel, housing means disposed in sleeved relationship around said mandrel, and an anchoring mechanism disposed around said tubular mandrel for gripping the wall of said conduit to hold said apparatus in a predetermined position upon relative movement between said mandrel and said housing means, said anchoring mechanism comprising:

a plurality of slip members spaced apart circumferentially around said mandrel, each slip member, including an exterior gripping surface and interior axially inclined surfaces, extending toward the opposite ends of said slip members;

first and second opposed relatively axially movable slip cone members, including wedge surfaces cooperable with said inclined surfaces on said slip members to hold said slip members radially outward when said first and second slip cone members have moved relatively towards each other;

first means releasably engageable with said first cone member and connected to said slip members for moving said slip members axially into and out of cooperable engagement with the wedge surface on said second slip cone member, said slip members being free to move radially relative to said first means;

second means comprising tongue and groove means for interconnecting said slip members with said second cone member for allowing simultaneous radial and axial movement of said slip members relative to said second slip cone member; and

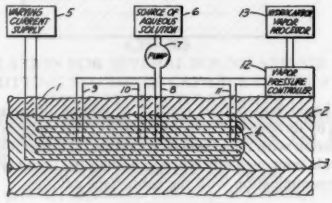
releasing means for disengaging said first means from said first cone member after said slip members have been radially expanded, permitting said first slip cone member to move axially toward said slip members with the wedge surface on said first slip cone member moving into supporting relationship to the cooperable inclined surface on said slip members.

4,359,091

RECOVERY OF UNDERGROUND HYDROCARBONS

Charles B. Fisher, 2850 Hill Park Rd., Montreal, Quebec H3H 1T1, and Sidney T. Fisher, 53 Morrison Ave., Montreal, Quebec H3R 1K3, both of Canada

Filed Aug. 24, 1981, Ser. No. 295,558
Int. Cl.³ E21B *43/24*
U.S. Cl. 166—248 **2 Claims**



1. The method of extracting hydrocarbons from an underground deposit of material containing hydrocarbons, which comprises:

injecting a conducting aqueous solution into a portion of said underground deposit, and

generating a varying magnetic field, at least a portion of said magnetic field including at least a part of said portion of said underground deposit into which said conducting aqueous solution has been injected, and

collecting said fluid injected and fluids generated by the heating effect of said magnetic field on said portion of said underground deposit, and

delivering said collected fluids to the input of a pressure controller, which substantially retards the flow of said collected fluids until the pressure at said input has risen to a selected value, corresponding to a selected temperature at which substantial pyrolysis occurs underground of hydrocarbons released by said heating effect of said magnetic field on said deposit containing hydrocarbons, but which is below the break-out value of fluids through the overburden of said deposit containing hydrocarbons, which passes fluids at said input to an external device at a rate which maintains said selected pressure substantially constant at the input to said pressure controller, and which passes said collected fluids substantially freely when said varying magnetic field is discontinued.

4,359,092

METHOD AND APPARATUS FOR NATURAL GAS AND THERMAL ENERGY PRODUCTION FROM AQUIFERS

Paul H. Jones, 3256 McConnell Dr., Baton Rouge, La. 70809

Continuation-in-part of Ser. No. 960,631, Nov. 14, 1978, abandoned. This application Oct. 18, 1979, Ser. No. 85,988
Int. Cl.³ E21B *19/07, 43/08, 43/12, 43/38*
U.S. Cl. 166—265 **36 Claims**

1. A method for producing water-free natural gas and thermal water from geopressure zone and hydropressure zone aquifers containing gas-saturated waters comprising:

(A) drilling a well so that it penetrates an aquifer containing gas-saturated water;

(B) using sand screening means to complete the portion of the well bore penetrating into the aquifer, thus allowing sand-free gas-saturated water to enter the well bore;

(C) inserting a thermally insulated eductor pipe having an open lower intake end into the well bore so as to form an annulus between the outer surface of the eductor pipe and the inner surface of the well bore;

(D) lowering the intake end of the eductor pipe so that it is below the surface of the gas-saturated water in the aquifer;

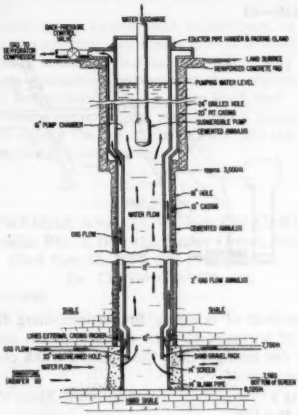
(E) removing water from the bottom of the well by means of both the annulus and the eductor pipe, thus lowering the

pressure in the aquifer and permitting natural gas to exsolve from the gas-saturated water in the vicinity of the well bore, to produce a gas cap;

(F) lowering the eductor pipe further after the gas cap is produced so that its intake end is again beneath the gas/water interface, to permit a continuous gas flow through the annulus and a water flow through the eductor pipe, and

(G) maintaining the eductor pipe intake end beneath the gas/water interface.

11. An apparatus for producing water-free natural gas and thermal water from wells bored into geopressure zone and



hydropressure zone aquifers containing gas-saturated water comprising:

(A) a well having sand screening means completing the portion of the well bore penetrating into the aquifer;

(B) an eductor pipe having an open lower intake end, located within and generally coaxial with the well bore, so as to form an annulus between the outer surface of the eductor pipe and the inner surface of the well bore;

(C) control valve means operatively associated with the annulus to control the flow of natural gas from the well through said annulus; and

(D) means, operatively associated, for raising and lowering the eductor pipe.

4,359,093

METHOD FOR ENHANCED OIL RECOVERY IN RESERVOIRS CONTAINING DISSOLVED DIVALENT METAL CATIONS

George G. Bernard, La Mirada, Calif., assignor to Union Oil Co. of California, Brea, Calif.

Filed Nov. 21, 1980, Ser. No. 208,863
Int. Cl.³ F21B *43/24*
U.S. Cl. 166—273 **10 Claims**

1. A method for recovering petroleum from a subterranean reservoir penetrated by an injection well and at least one spaced production well comprising:

(a) injecting into said reservoir through said injection well a 0.1 to 0.5 pore volume slug consisting essentially of an aqueous solution containing about 0.1 to 5 percent by weight of a water-soluble alkaline material selected from the group consisting of ammonium and alkali metal hydroxides, and alkaline alkali metal silicates having a molar ratio of M_2O/SiO_2 of 1 or above wherein M is an alkali metal atom, about 0.01 to 0.6 percent by weight of a chelating agent comprising an aminopolycarboxylic acid or a water-soluble salt thereof, and the remainder water,

(b) thereafter injecting an aqueous flooding medium into said injection well to drive the aqueous solution of (a) toward said spaced production well, and

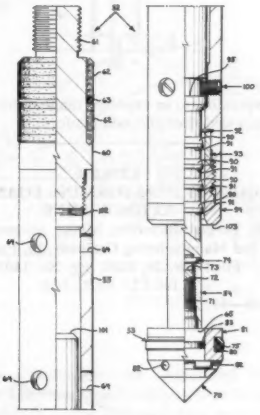
(c) recovering fluids from the reservoir via said production well.

4,359,094

SHEAR RELIEF VALVE

Ronald L. Risinger, Dallas, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Filed Dec. 9, 1980, Ser. No. 214,726
Int. Cl.³ E21B *23/08, 34/08, 43/12*
U.S. Cl. 166—317 **13 Claims**



1. A shear relief valve comprising: a housing; means for connecting said housing with a locking mandrel; a valve stem supported in said housing for movement between a first extended and a second retracted position and having one end portion projecting from said housing; a valve on said one end portion of said valve stem for sealing engagement with a seal surface along a flow passage; means for releasably locking said valve stem at said first extended position; and means for latching said valve stem at said retracted position.

4,359,095

WELL SUPPORT SYSTEM

Riley G. Goldsmith, Houston, Tex., assignor to Conoco Inc., Ponca City, Okla.

Filed Aug. 4, 1980, Ser. No. 175,104
Int. Cl.³ E21B *7/128*
U.S. Cl. 166—362 **15 Claims**

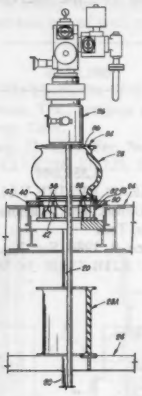
12. A method for supporting a tubular riser from a platform, said method comprising steps of:

supporting a lower end of a flexible elastomeric mounting means from said platform;

supporting said riser from an upper end of said flexible elastomeric mounting means; and thereby

supporting said tubular riser from said platform with a sub-

stantially constant supporting force over a range of compressed displacement of said flexible mounting means



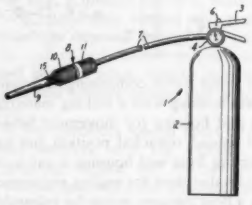
corresponding to an expected range of relative movement between said riser and said platform.

4,359,096

AQUEOUS FILM-FORMING FOAM FIRE EXTINGUISHER

Thomas W. Berger, Roseville, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 28, 1980, Ser. No. 140,909
Int. Cl.³ A62C *1/00*
U.S. Cl. 169—44 **44 Claims**



1. A hand portable fire extinguisher comprising a tank adapted to contain pressurized water, a valve surmounting said tank, a hose connected to said valve, a cartridge holder connected to said hose, an air aspirating nozzle connected to said cartridge holder, and a cartridge loaded in said cartridge holder and comprising a shaped body comprising a solid, coalesced mixture of water-soluble fluoroaliphatic surfactant and water soluble fluorine-free surfactant, said shaped body having at least one exposed surface adapted to be contacted with water flowing through said cartridge holder to dissolve said shaped body and form an aqueous film-forming foam solution of relatively constant composition over the period of discharge of said water from said tank.

12. A method of extinguishing a Class A or Class B fire, which comprises flowing a predetermined amount of water under pressure in contact with the surface of at least one shaped body comprising a solid, coalesced, mixture of water-soluble fluoroaliphatic surfactant and water-soluble fluorine-free surfactant to produce an aqueous film-forming foam solution of relatively constant composition, and applying said solution to said fire.

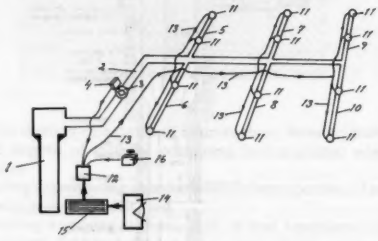
14. A shaped body comprising a solid, coalesced, mixture of water-soluble fluoroaliphatic surfactant and water-soluble, fluorine-free surfactant, said shaped body having at least one exposed surface which when contacted with a predetermined amount of flowing water is dissolved and forms an aqueous film-forming foam solution of relatively constant composition.

4,359,097

SPRINKLER SYSTEM

Lennart Claussen, Karlskoga, Sweden, assignor to Aktiebolaget Bofors, Bofors, Sweden

Filed Jun. 2, 1980, Ser. No. 155,815
Claims priority, application Sweden, Jun. 13, 1979, 7905190
Int. Cl.³ A62C *37/18*
U.S. Cl. 169—61 **10 Claims**



1. A method of releasing fire extinguishing fluid from a plurality of normally blocked sprinkler heads connected for receiving fire extinguishing fluid from a trunk conduit, comprising the steps of:

releasing a first portion of said sprinkler heads to direct said fluid at a fire;

detecting the beginning of flow of said fluid to said first portion of said sprinkler heads;

generating an electrical control signal in response to detecting said beginning of flow; and

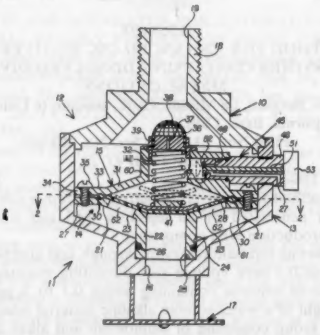
in response to said control signal, releasing a further portion of said sprinkler heads to direct said fluid at a fire.

4,359,098

AUTOMATIC ON-OFF FIRE SPRINKLER HEAD

Wilfred V. Johnson, Oxford, Mass., assignor to U.S. Fire Control Corporation, Oxford, Mass.

Filed Oct. 15, 1980, Ser. No. 197,219
Int. Cl.³ A62C *39/00*
U.S. Cl. 169—90 **11 Claims**



1. An automatic on-off sprinkler head comprising:

housing means defining a primary chamber and a pilot chamber enclosed thereby, an inlet orifice and an outlet orifice both opening into said primary chamber; a primary valve

seat located between said inlet and outlet orifices; a movable valve closure means comprising a flexible diaphragm wall portion separating said primary chamber from said pilot chamber, said valve closure means remaining against said valve seat to prevent fluid flow between said inlet and outlet orifices in response to less than a predetermined differential fluid pressure across said wall portion and movable away from said valve seat to permit fluid flow between said inlet and outlet orifices in response to a differential pressure across said wall portion greater than said predetermined pressure; a fill port providing limited fluid flow between said inlet orifices and said pilot chamber; and a release port for discharging fluid from said pilot chamber;

a pilot valve means closing said release port in a closed position and opening said release port in an open position;

a temperature sensor for moving said pilot valve means to said open position in response to the occurrence of an ambient temperature above a given level; and

deflector means supported by said housing means and disposed to deflect fluid discharging from said outlet orifice in a fire extinguishing pattern.

4,359,099

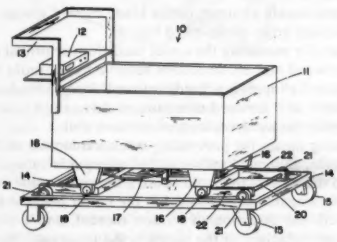
PORTABLE ANIMAL WEIGHING CART

William Henslin, Rte. 2, Box 112, Dodge Center, Minn. 55927

Filed Dec. 15, 1980, Ser. No. 216,270

Int. Cl.³ G01G *17/08*

U.S. Cl. 177—140 **3 Claims**



1. A combination cart and weighing device having a weighing pen;

said weighing pen having an opening in the top to place an animal therein and sufficiently high sides to prevent an animal from jumping out of said weighing pen;

said weighing pen having a plurality of first members attached to said weighing pen for transmitting a downward force;

a support frame, said support frame having a first end and a second end and means thereon to permit movement of said cart and weighing device from one location to another;

a torsional support system having a plurality of bearing members on each end of said torsional support system with said plurality of bearing members pivotally connecting said support frame to said torsional support system, said torsional support system including a first half-linkage mounted on said first end of said support frame and a second half-linkage mounted on said second end of said support frame with said first half-linkage connected to said second half-linkage and said first half-linkage and said second half-linkage extending from said first end of said support frame to said second end of said support frame;

a tension member located intermediate said first end of said support frame and said second end of said support frame, said tension member connected to said weighing pen and to said first half-linkage and said second half-linkage so that when an animal is placed in said weighing pen the weight of the animal provides a downward force on each of said first half-linkage and said second half-linkage through said bearing members to thereby provide a tension force on said tension member in proportion to the weight of the animal in said weighing pen while providing a rigid structure to support the use of said combination cart and weighing device as either a cart or a weighing device; and

means mounted on said tension member to measure the strain on said tension member to thereby provide a signal corresponding to the weight of an animal in said weighing pen.

4,359,100

ATTACHMENT COMBINATION FOR AGRICULTURAL TRACTORS

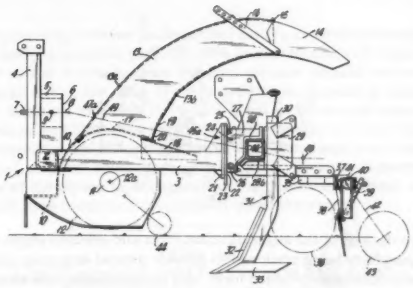
Ernst Weichel, Postfach 1180, Bahnhofstrasse 1, D-7326 Heiningen, Fed. Rep. of Germany

Filed Oct. 15, 1980, Ser. No. 197,067

Claims priority, application Fed. Rep. of Germany, Oct. 29, 1979, 2943005

Int. Cl.³ A01B *33/02*

U.S. Cl. 172—30 **6 Claims**



1. Attachment combination for agricultural tractors for loosening soil in a field preferably covered with living or dead plant or crop residues, comprising a covering hood forming an ejection channel, a motor-driven flail mower disposed under said covering hood, at least one row of loosening elements disposed behind said flail mower, a support tube for said loosening elements, and motor-driven tools rotating behind said loosening elements for crumbling the loosened soil, wherein said flail mower hood is arranged to discharge in one of a first position and a second position so that in the first position said hood discharges before the front side of the support tube of the loosening elements in a direction slanting backward and downward and in the second position discharges beyond the loosening elements and the rotating tools for the crumbling of the soil disposed behind them, characterized in that said flail mower is mounted on a rearwardly open U-shaped support frame (**1**) which consists of at least one cross beam (**2**) extending crosswise to the direction of travel and of at least two laterally spaced longitudinal beams (**3**) extending in the direction of travel from said cross beam and each having a free end, a coupling piece on each said free end of said beams (**45*a***), a counter-piece (**45*b***) clamped on the support tube (**46**) of the loosening members and said coupling piece connected for easy detachment with said counter-piece.

4,359,101

GROUND PREPARATION TOOL FOR REFORESTATION

Michel Gagnon, P.O. Box 236, La Malbaie, Quebec, Canada

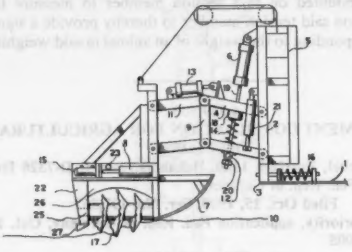
Filed Oct. 12, 1979, Ser. No. 84,416

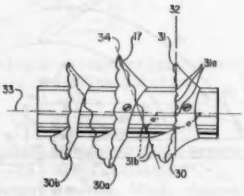
Int. Cl.³ A01B *9/00, 33/04, 33/10, 63/118*

U.S. Cl. 172—38 **20 Claims**

1. An auger adapted for use as a plow to be drawn in a substantially axial direction and rotated to oppose forward

motion comprising a plurality of generally helical turns having a ground engaging section of its periphery shaped to have an angle of attack in a first plane at a selected angle to the axis of the auger and at least one additional section of the periphery shaped to have an angle of attack in a second plane at an angle





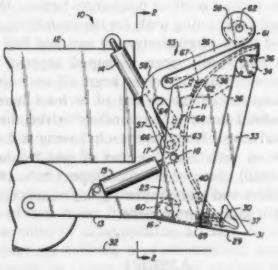
to the axis of the auger different from said selected angle, said periphery being scalloped to provide ground engaging, generally outwardly rounded teeth, said teeth including one series of consecutive convex teeth disposed to meet the soil in said first plane, and at least one additional series of convex teeth disposed to meet the soil in said second plane.

4,359,102

RESONANCE AIDED EARTH-WORKING EQUIPMENT

Raymond A. Gurries, Reno, and Harry J. Stormon, Sparks, both of Nev., assignors to Resonant Technology Company, Sparks, Nev.

Filed Mar. 20, 1980, Ser. No. 131,989
Int. Cl.³ E02F *3/76*
U.S. Cl. 172—40 **24 Claims**



23. Earth-working equipment comprising:
a vehicle;
a transversely elongate earth-working implement having a concave, front earth-working surface, a correlative rear convex surface, and a transversely extending bottom edge;
means for coupling the implement to the vehicle;
a transversely elongate cutter blade extending across the bottom edge of the implement;
means for mounting the cutter blade in downward closely spaced relationship from the bottom edge of the implement for reciprocal motion in fore and aft directions relative to the bottom edge of the implement;
first and second force transmitting beams each having two divergent approximately straight legs that meet at a juncture to form approximately a right angle, a resonant frequency and a node at the juncture, a first anti-node at the end of the one leg, a second anti-node at the end of the other leg at the resonant frequency, and an inward extension projecting from the juncture in a direction which generally bisects the acute angle;
a source of vibrations at or near the resonant frequency coupled to each of the first and second beams near the first anti-node;
means for mounting the first and second beams adjacent to the rear surface of opposite sides of the implement by attaching their respective inward extensions thereto so that the implement extends into the space between the legs of each beam with the first anti-node disposed near the top of the implement and the second anti-node disposed near the bottom of the implement within striking distance of the cutter blade to drive the cutting blade through the earth.

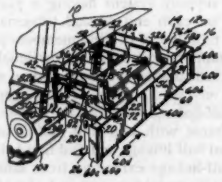
24. A bulldozer or the like comprising;
a tractor;
a transversely elongate mold board having a bottom edge;
means for coupling the mold board to the tractor for dozing purposes;
a transversely elongate cutter blade closely spaced from the bottom edge of the mold board;
means for mounting the cutter blade for reciprocal motion in forward and aft directions relative to the mold board;
means for applying unidirectional force impulses to the blade in a forward direction to drive the blade intermittently forward without aft motion; and
guiding means for preventing sideward motion of the cutter blade, the guide means including a guide support secured to the back of the mold board from side-to-side, a plurality of elongated slots formed in the cutter blade in alignment with the direction of motion thereof, and a plurality of posts attached to the support, the posts each having protrusions elongated transverse to the direction of cutter blade motion riding in the respective slots.

4,359,103

GROUND-WORKING IMPLEMENT

Leroy M. Heitman, 28900 Ironwood, Sunnymead, Calif. 92388

Filed May 30, 1978, Ser. No. 910,240
Int. Cl.³ A01B *49/02*; E02F *3/76*
U.S. Cl. 172—197 **9 Claims**



1. A ground-working implement for attachment to motive power means comprising in combination,
a ripper comprising an elongated frame and two or more ripping teeth depending therefrom in spaced relation,
mounting and positioning means for said ripper connected to said frame and attachable to motive power means to be operable to position said teeth in raised position out of the ground or at any depth in the ground,

said mounting means comprising a pair of mounting arms attached to said frame in vertically spaced relation and adapted to be connected relative to said motive power means in similarly vertically spaced relation to be substantially parallel throughout raising and lowering of said frame to thereby maintain said ripper teeth in predetermined depending relation,

a scraper hingedly mounted on said frame and including operating means for alternatively placing said scraper in an inoperative position above said teeth regardless of the depth of said teeth in the ground and in an operative scraping position relative to said teeth,

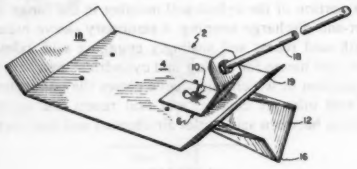
and remote controlled second operating means operatively interposed between the motive power means and said frame for raising and lowering of the latter.

4,359,104

FURROW OPENING, CLOSING AND SOIL FIRMING DEVICE FOR SEED PLANTING

Ray Haapala, Rte. 3, Box 76, Dassell, Minn. 55324

Filed Apr. 22, 1981, Ser. No. 256,535
Int. Cl.³ A01B *1/20*
U.S. Cl. 172—372 **1 Claim**



1. A furrowing tool comprising flat generally rectangular plate having top and bottom sides and having first and second opposite ends, said first end having an integral upwardly-flared flange extending thereacross

an elongate keel on the bottom side of the plate, the length of said keel extending in the end-to-end direction of the plate,

said keel being substantially V-shape in cross-section with the maximum width of the V thereof being substantially less than the width of the plate,

said keel varying in depth from end-to-end, and having one end relatively deep and an opposite end substantially merging with the flat bottom side of the plate adjacent the first end thereof,

the other end of the keel extending rearwardly beyond the second end of the plate,

an elongate handle

and a handle mounting on the top side of the plate,

said handle mounting being reversible between one position in which the handle angles upwardly and towards the second end of the plate and a second position in which the handle angles upwardly and towards the first end of the plate.

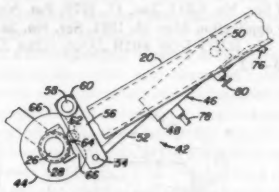
4,359,105

SOIL WORKING IMPLEMENT INCLUDING HYDRAULIC CENTERING AND LOCKING MEANS FOR CASTER WHEEL

Terry L. Van Natta, Bettendorf, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Mar. 26, 1981, Ser. No. 247,581
Int. Cl.³ A01B *3/24*
U.S. Cl. 172—386 **9 Claims**

1. An agricultural soil-working implement having a fore-and-aft frame member spaced above the ground and including a bearing on a substantially upright axis, caster means supporting the frame and including a ground-engaging wheel and an axle journaling the wheel for rolling rotation and having a standard journalled in the bearing for turning about said axis, and locking means for releasably locking the standard with the wheel in straight-ahead position, characterized in that the locking means includes a centering element rigid with the standard and having therein notch means disposed according to the straight-ahead position of the wheel and further having a pair of arm portions diverging from the notch means and arranged to apply torque to the standard about its axis in response to forces acting thereon when the wheel is out of its straight-ahead position, and a bi-directional power-operated



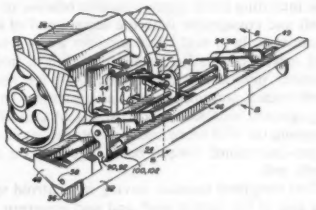
device acting between the frame and the centering element and including a movable part operative in one direction of operation of the device to enter between the arm portions and to engage one or the other of the arm portions, depending upon the direction to which the wheel is out of its straight-ahead position, and ultimately to enter the notch means for centering the standard and locking it in the straight-ahead position of the wheel, said part being movable in the other direction of operation of the device to disengage from the centering element to enable free turning of the standard about the axis.

4,359,106

AGRICULTURAL IMPLEMENT FOR BUILDING IRRIGATION FLOW CHANNELS

Enrique F. Nevarez, Gila Bend, Ariz., assignor to Paloma Ranch, Div. of Cranco, Gila Bend, Ariz.

Filed Jan. 29, 1980, Ser. No. 116,472
Int. Cl.³ E02F *3/62, 5/22*
U.S. Cl. 172—529 **4 Claims**



1. An agricultural implement for forming mounds or berms of material comprising:

(a) a frame having a hitch attachable to a prime mover;

(b) an elongate rotor mounted for rotation on said frame, said rotor having a plurality of blades defining moldboard surfaces for scraping and forming material;

(c) a rock shaft mounted for rotation on said frame, said rock shaft being generally parallel to said rotor and spaced from said rotor said rock shaft extending substantially coextensive with said rotor;

(d) spaced apart arm means extending from said rock shaft and having at least a pair of longitudinally spaced apart rollers associated therewith;

(e) hydraulic shock absorbing means having a rod end and a cylinder end and extending between said hitch and frame to absorb shock loading imposed thereon; and

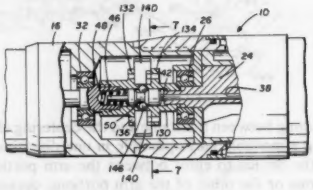
(f) hydraulic actuating means for selectively rotating said rock shaft from a first position with said rollers engaging one of said rotor blades to arrest rotation of the rotor to a second position with said rollers out of engagement with the rotor thereby permitting rotation of the rotor.

4,359,107

SHUT-OFF APPARATUS FOR PNEUMATIC DRIVEN TOOLS

William S. Smith, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Division of Ser. No. 4,013, Jan. 17, 1979, Pat. No. 4,307,784.
This application May 15, 1981, Ser. No. 263,836
Int. Cl.³ B23Q *5/06*; F01B *25/06*; B25B *21/00*
U.S. Cl. 173—12 **5 Claims**



1. An improved torque-responsive, shut-off apparatus for pneumatically driven tools that include an air motor driving a rotatable output shaft arranged to rotate a tool rotatably driven by said output shaft, an air supply and a main valve located in an air supply passageway for controlling air flow from the air supply to the motor, the improvement comprising:

a shut-off valve located between the main valve and the motor, said valve including a valve seat encircling the air supply passageway, a valve member fitting relatively closely in the air supply passageway, said valve member being movable into and out of engagement with said valve seat to close and open said valve, respectively, and an elongated valve control member having a first end connected to said valve member and having a second end extending partially through said output shaft;

governor means mounted for rotation with the output shaft and including latch means slideable relative to said output shaft and engageable with the second end of said control member to hold said valve member away from said seat and inertia responsive means including a first weighted member pivotal relative to said shaft for releasing said latch means permitting said valve member to move into engagement with said seat closing said shut-off valve and stopping the tool when said air motor slows in response to a pre-determined torque being imposed on said output shaft; and,

said first weighted member having its centroid spaced from the axis of the output shaft and said governor means also includes a second weighted member pivotal relative to said output shaft and having a centroid located to balance said first weighted member.

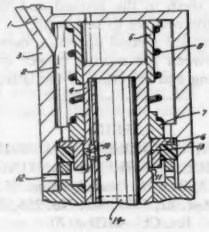
4,359,108

PNEUMATIC HAMMER HAVING A SAFETY DEVICE

Gerd Radtke; Klaus Heerde; Hans-Joachim Steiner, and Klaus Mechelke, all of Berlin, German Democratic Rep., assignors to VEB Werkzeugkombinat Schmalkalden, Schmalkalden, German Democratic Rep.

Filed Mar. 31, 1980, Ser. No. 136,035
Claims priority, application German Democratic Rep., Apr. 24, 1979, 212446
Int. Cl.³ B25D *17/10*
U.S. Cl. 173—15 **3 Claims**

1. A pneumatic hammer comprising a housing body defining an inlet air channel and an outlet air channel; a hollow cylindrical member guided for a reciprocating axial movement within said body, one end of said member being adapted for holding a work tool; a striking piston guided for a reciprocating axial movement within said cylindrical member; air control means provided in a wall of said cylindrical member and communicating with the interior of said cylindrical member to control the strokes of said piston, said air control means including an air inlet-and-discharge opening in a cylindrical surface portion



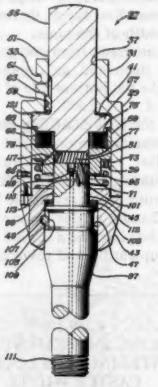
of said cylindrical member between said inlet and outlet air channels; a safety device including a recess formed in said surface portion of the cylindrical member in the range of said air inlet-and-discharge opening, a stationary sleeve exceeding in length said recess and sealingly engaging said cylindrical member, and means for biasing said cylindrical member into an initial position in which said sleeve closes the connection between said inlet air channel and said recess and opens the connection between said outlet air channel and said recess.

4,359,109

IMPACTOR DRILL TOOL

Hung-Viet Truong-Cao, Corsicana, Tex., assignor to Hughes Tool Company, Houston, Tex.

Filed Jul. 21, 1980, Ser. No. 170,267
Int. Cl.³ B23B *45/16*; E21C *1/08*
U.S. Cl. 173—111 **3 Claims**



1. In an impact tool of the type having a carriage, a hammer positioned in the carriage for axial movement with respect to the carriage, means for reciprocating the hammer, the carriage having an axial passage extending below the hammer, a rock drill attachment carried within the axial passage, comprising:

a housing having a cylindrical neck for reception in the axial passage, and a transverse recess formed on one sidewall of the housing that mates with a recess formed in the axial passage, defining a cavity:

a pin adapted to be placed in the cavity to retain the housing with the carriage;

a tappet carried in the housing for axial movement with respect to the housing, the tappet protruding above the neck of the housing for receiving blows from the hammer;

means for preventing the tappet from rotating with respect to the housing;

a tool shank rotatably carried in the housing for receiving blows from the tappet, the tool shank having a lower end adapted to receive a bit;

conversion means for converting the movement of the tappet toward the tool shank into rotation of the tool shank; and

spring means for moving the tappet upward after impact with the tool shank;

the conversion means having means for allowing the tool shank to remain stationary as the tappet is moved upward by the spring means.

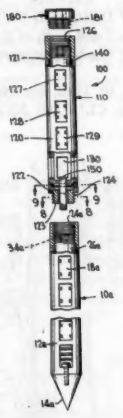
4,359,110
VARIABLE-LENGTH SAMPLING DEVICE

James R. Peterson, Rte. 1, Box 121, Wilton, Calif. 95693

Continuation-in-part of Ser. No. 12,735, Feb. 16, 1979, Pat. No. 4,252,200. This application Sep. 22, 1980, Ser. No. 189,038

Int. Cl.³ E21B *49/06*

U.S. Cl. 175—20 **7 Claims**



1. A variable-length sampling device capable of obtaining a plurality of samples from a mineral deposit, said variable-length sampling device comprising

a bottom section which includes an elongated tubular member, an elongated cylindrical storage member rotatably positioned within said elongated tubular member, and a pointed conical member attached to the lower end of the cylindrical storage member; said elongated tubular member including a tubular wall having a plurality of window sets which are spaced apart along the length thereof; said elongated cylindrical storage member having a plurality of diametrically-extending compartments which are spaced apart along the length thereof which are registerable with the window sets in said tubular member, each compartment including a spring-like tooth member which is capable of extending through a corresponding window in said tubular member when aligned therewith, said elongated cylindrical storage member also including a blind indentation in the upper end,

an extension section which includes an elongated tubular element and an elongated cylindrical storage element rotatably positioned with said elongated tubular element; said elongated tubular element including a tubular wall having a plurality of window sets which are spaced apart along the length thereof and an integral floor portion at the lower end thereof, said floor portion including an extension flange capable of attachment to the upper end of said tubular member and a cylindrical hole extending axially therethrough with respect to said tubular wall, said cylindrical hole having a larger diameter than the largest dimension of said indentation in the upper end of said cylindrical storage member; said elongated cylindrical storage element having a plurality of diametrically-extending compartments which are spaced apart along the length thereof which are registerable with the window sets in said tubular element, each compartment including a spring-like tooth member which is capable of extending through a corresponding window in said tubular element when aligned therewith, said elongated cylindrical storage element also including a blind indentation in the upper end identical in size and shape to said indentation in the upper-end of said cylindrical storage member, as well as an axial bore extending from the lowermost compartment to the lower end thereof, said bore having a cross section equal in size and shape to said indentation in the upper end of said cylindrical storage member, and

a connection pin which is positionable to extend through said bore in said cylindrical storage element and said cylindrical hole in said tubular element to fit within said indentation in the upper end of said cylindrical storage member, said connection pin having a cross section of similar size and identical shape to the indentation in the upper end of said cylindrical storage member so as to positively interconnect the cylindrical storage element with said cylindrical storage member.

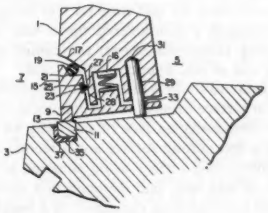
4,359,111
SELF COMPENSATING SEAL APPARATUS

Eduardo B. Gonzalez, Ave. Universidad Num. 482, Mexico 13, D.F., Mexico

Filed May 27, 1980, Ser. No. 153,684

Int. Cl.³ E21B *10/22*

U.S. Cl. 175—227 **18 Claims**



1. A sealing device for forming a seal along the periphery between first and second surfaces which surround an internal space, said sealing device comprising:

(a) a first closed seal means mounted in said first surface surrounding the periphery of said internal space;

(b) a second closed seal means mounted in said second surface surrounding the periphery of said internal space;

(c) spring biasing means for biasing said first seal means in contact with said second seal means to form a seal therebetween around the periphery of said internal space, wherein (the) said spring biasing means is displaced (radially) inward with respect to said first and second closed seal means in said internal space;

(d) coupling means for coupling said spring biasing means to said first seal means; and

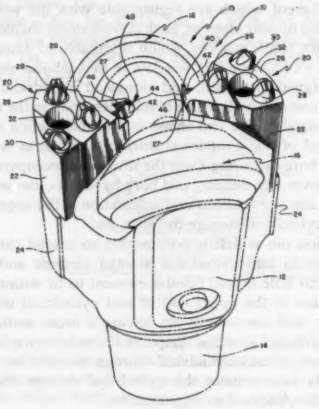
(e) third seal means for sealing said spring biasing means from an external environment.

4,359,112

HYBRID DIAMOND INSERT PLATFORM LOCATOR AND RETENTION METHOD

Lloyd L. Garner, Dana Point; Joe W. Vincent, San Juan Capistrano, and William Baker, III, Irvine, all of Calif., assignors to Smith International, Inc., Newport Beach, Calif.

Filed Jun. 19, 1980, Ser. No. 161,199
Int. Cl.³ E21B *9/36*
U.S. Cl. 175—329 **1 Claim**



1. A hybrid rock bit comprising:

a rock bit body having a pin end at a first end and one or more legs with cutter cones mounted on journals extending from said legs at a second cutter end of said bit body;

one or more drag bit legs attached to said body at said second cutter end coextending with said one or more cutter cone legs, said drag bit legs having a plurality of diamond stud body insert blanks inserted in stud retaining holes formed in a cutting face of said one or more drag bit legs, said face formed by said drag bit legs being substantially wedge-shaped, a cantilevered tip of said wedge-shaped face being positioned nearest the center of said second cutting end of said hybrid rock bit; and

a single diamond studless disk is metallurgically bonded to a platform surface formed on the innermost cantilevered tip of said wedge-shaped face of said drag bit leg, said disk having a first cutting surface and a second mounting surface, said second surface being mounted to said platform surface of said face, said diamond disk serves to remove the core material from the center of a borehole bottom.

4,359,113

EARTH BORING BIT WITH EXTENDED GAGE

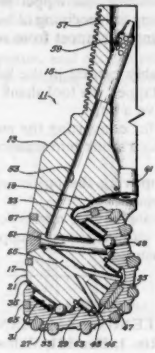
Wilford V. Morris, Houston, Tex., assignor to Hughes Tool Company, Houston, Tex.

Filed Sep. 8, 1980, Ser. No. 184,708
Int. Cl.³ E21B *10/22*
U.S. Cl. 175—337 **5 Claims**

1. In an earth boring bit of the type having three bit legs, a bearing pin depending from each bit leg, and a cutter having a central cavity and mounted on each bearing pin with roller bearings, each of the roller bearings having inner and outer ends, the improvement comprising in combination:

a roller race formed in the central cavity for receiving the roller bearings, with an annular outer wall to retain the roller bearings in the race;

the lower side of each bearing pin commencing at the outer side of each bit leg, defining a corner free of a shirttail flange; the bearing pin from the inner ends of the roller



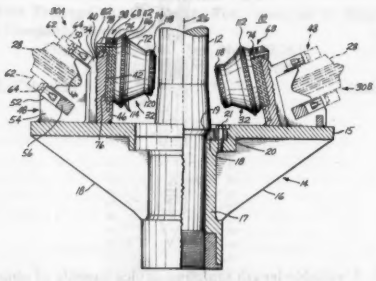
bearings to the bit leg being cylindrical and of constant diameter.

4,359,114

RAISE DRILL BIT INBOARD CUTTER ASSEMBLY

James D. Miller; Worm Lund, both of Bellevue, and Donald W. Jones, Seattle, all of Wash., assignors to Robbins Machine, Inc., Seattle, Wash.

Filed Dec. 10, 1980, Ser. No. 215,019
Int. Cl.³ E21B *10/20*
U.S. Cl. 175—344 **18 Claims**



1. In a raise bit for enlarging a pilot hole into a larger diameter hole by fracturing the earth formation surrounding the pilot hole, the bit having a drive stem projecting upwardly through the pilot hole and a bit body attached to the lower end portion of the stem, the improvement comprising:

a plurality of cutter mounting housings disposed about the bit body at locations spaced radially outwardly from the drive stem, at least one of said housings having portions defining an upwardly projecting lug;

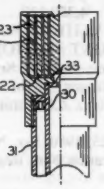
a center roller cutter assembly mounted in cantilever fashion on a corresponding mounting housing to extend generally radially toward the longitudinal center of the stem, each of said roller cutter assemblies including a hanger bracket having an upright section including a thrust face abuttable against said housing, a shoulder section extending transversely outwardly from said upright section and defining a downwardly open groove for receiving a corresponding housing lug and a spindle cantilevered outwardly from said bracket upright section to extend in a direction toward the stem for supporting a roller cutter closely adjacent but spaced from the stem; and

securing means for detachably securing said center roller cutter assembly to a corresponding mounting housing.

4,359,115
NOVEL ROTARY DRILL BITS AND DRILLING PROCESS

Georges Cagnioncle, Lyons, France, assignor to Construction de Materiels de Mines S.A., Mulhouse, France

Filed Mar. 10, 1980, Ser. No. 128,412
Claims priority, application France, Mar. 8, 1979, 79 05922
Int. Cl.[3] E21B *10/60*
U.S. Cl. 175—393 9 Claims

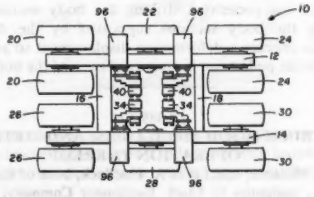


1. A rotary drill bit comprising a body having at least one cutting plate with a cutting edge and a cutting face thereon, and means for passing a protective stream of high pressure fluid outwardly from the drill bit in a direction perpendicular to said one cutting edge and parallel to the axis of drilling, said means for passing a protective stream of high pressure fluid comprising at least one small fluid exit porthole located in said one cutting face for passing the stream of high pressure fluid therethrough in a manner such as to provide a film for protecting said cutting edge.

4,359,116
GROUND PRESSURE REDUCING UNDERCARRIAGE UNIT

Harry S. Mankey, Dallas, Tex., assignor to Standard Manufacturing Company, Incorporated, Dallas, Tex.

Filed Jan. 21, 1980, Ser. No. 113,590
Int. Cl.[3] B62D *61/10, 61/12*
U.S. Cl. 180—6.48 23 Claims

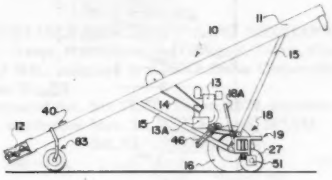


23. An undercarriage unit, comprising:
a pair of elongate hollow load-bearing side frames positioned in spaced apart relationship;
means for rigidly interconnecting said said frames;
at least three pairs of axles;
means for rotatably supporting said axles at longitudinally spaced points along said side frames, at least three of said axles being supported on each of said side frames;
a plurality of wheels, one wheel being mounted on at least the outboard end of each of said axles;
the middle wheels extending below a plane lying tangent to the bottoms of the endmost wheels to facilitate skid steering;
transmission means associated with each of said side frames for drivingly interconnecting the axles rotatably supported by said side frames;
drive means for actuating each of said transmission means to selectively effect concurrent rotation of the axles and wheels associated with each side frame; and
said drive means comprising at least two motors mounted on each side frame, said transmission means directly coupling each motor to a single axle.

4,359,117
AUGER ASSEMBLY MOVING DEVICE

Hugh R. Vaughan, Box 531, Yorkton, Saskatchewan, Canada

Filed Jun. 27, 1980, Ser. No. 163,819
Int. Cl.[3] B60K *25/00;* B62D *51/04*
U.S. Cl. 180—11 17 Claims



1. A drive attachment for auger assemblies which include supporting structure, a pair of ground engaging wheels mounted upon a transverse axle and supporting an auger tube and flight assembly; said drive attachment comprising in combination a frame secured to said supporting structure, a ground engaging drive wheel, a drive wheel axle spanning said frame and being journalled for rotation within said frame, said drive wheel being secured to said drive wheel axle, gear means operatively connected to said drive wheel axle, drive means for said gear means selectively connectable to a source of power and means associated with said drive means to rotate said drive wheel selectively in either direction, means to engage and disengage said drive means from the source of power, said last mentioned means including a belt pulley driven by the source of power, a drive pulley on said frame operatively connected to said drive means and a belt extending around said pulleys, a belt tightening device mounted on said supporting structure selectively tightening and loosening said belt thereby engaging and disengaging the belt pulley with said drive pulley, said belt tightening device including an idler pulley mounted on said supporting structure, one run of said belt passing around said idler pulley, an arm pivoted to said supporting structure, said arm being movable from one position to another position and vice-versa, a further idler pulley journalled for rotation on the distal end of said arm, and engaging the other run of said belt and a tension spring urging said further pulley into engagement with said other run when said arm is in said one position and holding said arm over center and operatively disengaged from said other run, when said arm is in the other position.

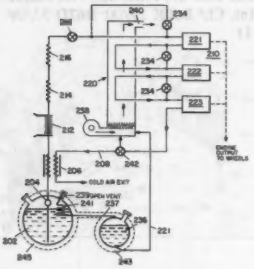
4,359,118
ENGINE SYSTEM USING LIQUID AIR AND COMBUSTIBLE FUEL

Albert L. Latter, Marina del Rey; James L. Dooley, and R. Philip Hammond, both of Santa Monica, all of Calif., assignors to R & D Associates, Marina del Rey, Calif.

Continuation-in-part of Ser. No. 73,894, Sep. 10, 1979, which is a continuation-in-part of Ser. No. 958,056, Nov. 6, 1978, Pat. No. 4,226,294. This application Dec. 15, 1980, Ser. No. 216,565
Int. Cl.[3] B60K *3/02;* F01K *25/06*
U.S. Cl. 180—54 B 10 Claims

1. A safe and economical automobile system utilizing a combinational engine for operating on liquified cryogenic gas and LNG as energy sources comprising:
an automobile;

a first insulated tank for storing liquified cryogenic nitrogen or air mounted in said automobile;
means for pumping said liquified gas to an elevated pressure;
first heat exchanger means for warming said high pressure liquified gas toward the ambient whereby it changes to the gaseous state;
second heat exchanger means located in the said automobile to receive heat from the ambient air and further warm the pressurized gas, as said automobile moves forward;



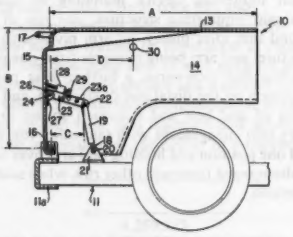
a second insulated tank for storing LNG as a combustible fuel in said vehicle;
means for venting said second tank for storing LNG;
means for cooling said LNG venting means by cooling from said first insulated tank to cause the LNG vapor to condense and flow back into said second tank;
means for burning said fuel to heat the pressurized gas; and
multi-stage expansion engine means for receiving said pressurized gas, permitting it to expand, and obtaining useful work therefrom.

4,359,119

SPRING-ASSISTED ELONGATED MASS OVER-CENTER SYSTEM

Steven B. Kammerman, Langhorne, Pa., assignor to New York Development Consultants, Ltd., Bayside, N.Y.

Filed May 4, 1979, Ser. No. 36,185
Int. Cl.³ B62D *33/06*
U.S. Cl. 180—69 R **3 Claims**



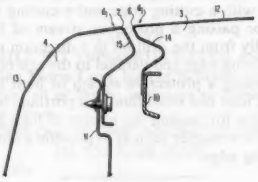
3. In combination with a forward portion of a truck body, a truck hood having in a closed position a vertical component and a horizontal component, said hood being hinged adjacent to the lower end of said vertical component to the forward end of said body so that said hood when opened will swing from its closed position through an over-center position to a forward open position, the improvement comprising spring means, means for mounting one end of said spring means to said truck body and the other end of said spring means to a means interconnecting said spring with said truck hood, said hood having open and closed terminal positions, said spring means being compressed when the truck hood is in one of said terminal positions such that said spring means will assist movement of said truck hood from one terminal position toward the over-center position, said means interconnecting the spring means and the truck hood is a hinge arm pivotally connected at one end to the spring and pivotally connected at the other end to the truck hood, stop means connected to said arm, said stop means preventing relative rotation of said arm with respect to said truck hood until said truck hood moves substantially into an over-center position, and thereafter said stop means permitting relative rotation of said arm with respect to said truck hood to discontinue transmission of force from said spring to said truck hood.

4,359,120

PASSENGER MOTOR VEHICLE WITH YIELDING BODY FRONT SECTIONS

Willi Schmidt, Herrenber; Norbert Schwuchow, and Gerhard Burk, both of Sindelfingen, all of Fed. Rep. of Germany, assignors to Daimler-Benz A.G., Stuttgart, Fed. Rep. of Germany

Filed Aug. 25, 1980, Ser. No. 180,639
Claims priority, application Fed. Rep. of Germany, Aug. 23, 1979, 2934060
Int. Cl.³ B60R *21/14*
U.S. Cl. 180—69 R **11 Claims**



1. A passenger motor vehicle which includes front vehicle body sections adapted to yield to forces of a magnitude equal to that of impact forces of a pedestrian striking from at least one of the front and from above the respective body sections, characterized in that permanently deformable deformation means are provided for supporting the front vehicle body sections on reinforcing parts of the motor vehicle, said deformation means are adapted to become permanently deformable prior to deformation of the body section under low impact forces of the pedestrian striking the body sections thereby enabling the body sections supported by the deformation means to execute a deformation displacement so as to reduce injury to the pedestrian in an impact zone of the body sections.

4,359,121

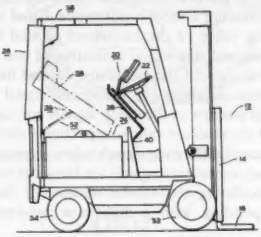
LIFT TRUCK HOOD MECHANISM AND METHOD FOR OPERATION THEREOF

John S. Messner, and Louis A. Haddock, both of Battle Creek, Mich., assignors to Clark Equipment Company, Buchanan, Mich.

Filed Nov. 24, 1980, Ser. No. 209,748
Int. Cl.³ B62D *25/12*
U.S. Cl. 180—69 R **23 Claims**

1. A hood mechanism for the power source compartment of an industrial truck, comprising a cover for enclosing the top of the compartment, a hinge mechanism between said cover and the truck for moving said cover between a horizontal closed position and a vertical opened position, a first pivotal means for connecting said hinge mechanism to said cover near the center line between the forward and rearward ends of said cover, a second pivotal means for connecting said hinge mechanism to said truck at one end of the compartment, and guide means for controlling the movement of one end of said cover in a substantially vertical path between the closed and opened positions of the cover while the opposite end of said cover moves in a substantially horizontal direction.

15. A method for raising a compartment cover on an industrial vehicle from a substantially horizontal position to a substantially vertical position permitting access to the compartment, said method comprising the steps of lifting one end of the cover, guiding said lifting of one end in a substantially vertical



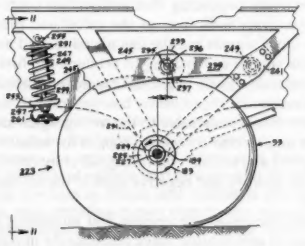
path between closed and opened positions of the cover, pivoting the cover at the center thereof about an axis transverse to the vehicle, moving the axis toward the end of the compartment below the end of the cover being lifted and raising the axis while pivoting the cover and moving the axis toward the end of the compartment.

4,359,122

OFF ROAD VEHICLES

William H. Albee, 1524 Spring Brook Rd., Walnut Creek, Calif. 94596

Division of Ser. No. 866,733, Jan. 3, 1978, abandoned. This application Oct. 6, 1980, Ser. No. 194,266
Int. Cl.³ B60K *23/00*
U.S. Cl. 180—74 **11 Claims**



2. An oscillation damping suspension system for a vehicle having a load supporting bag roller rotatable mounted on an axle fixed to the vehicle frame, said suspension system comprising,

a vehicle frame,

a pneumatic bag roller,

an axle extending longitudinally through the bag roller,

trunion means fixed with respect to the vehicle frame and associated with the axle for mounting the axle and bag roller for rotation beneath the vehicle frame,

a top roller engaged with the top surface of the pneumatic bag roller,

top roller mounting means mounting the top roller for rotation about an axis parallel to the axis of rotation of the bag roller,

and biasing means associated with the top roller mounting means and with the vehicle frame for engaging the top roller with the bag roller with a selected, variable amount of force to thereby limit the extent of oscillation of the upper surface of the bag roller in a vertical direction.

11. A top-drive roller of the kind mounted for rotation in trunnions fixed to a vehicle frame and associated with the top of a pneumatic bag roller for applying a vehicle load to the top of the pneumatic bag roller and for also applying a rotational drive to the top surface of the pneumatic bag roller through frictional engagement between the top drive roller and the pneumatic bag roller,

said top roller having a mid-section and two end sections,

said mid-section having an outer layer of material which has a high coefficient of friction with respect to the tread material of the pneumatic bag roller and

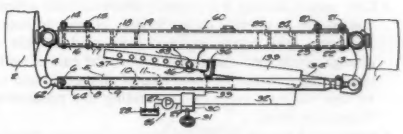
each end section having an outer surface which has a minimal coefficient of friction with respect to the material of the pneumatic bag roller.

4,359,123

ADJUSTABLE POWER STEERING MECHANISM

Robert C. Haupt, Wauwatosa, and George E. Kaiser, West Allis, both of Wis., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Continuation of Ser. No. 72,831, Sep. 6, 1979, abandoned. This application Mar. 26, 1981, Ser. No. 247,844
Int. Cl.³ B62D *7/16*
U.S. Cl. 180—159 **10 Claims**



1. An adjustable device in a hydraulic steering system for front wheel steering of a tractor comprising, an axially adjustable front axle for adjustably varying tread width, a bracket fixed to the front axle for mounting a hydraulic steering cylinder on the front axle, a tie rod, a pair of steering arms connected to the ends of said tie rod, a single axially adjustable device on said tie rod, a hydraulic steering cylinder connected between said bracket on said front axle and one of said steering arms, a hydraulic steering cylinder adjustable mechanism on said hydraulic steering cylinder, to lengthen or shorten the effective length of said hydraulic steering cylinder between said bracket and steering arm to compensate for axial adjustment of said axle and said tie rod.

4,359,124

CONSTANT RUNNING SPEED CONTROL SYSTEM FOR AUTOMOBILE

Yutaka Ninoyu, and Motoyoshi Suzuki, both of Kariya, Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Oct. 9, 1980, Ser. No. 195,501
Claims priority, application Japan, Oct. 16, 1979, 54-133759
Int. Cl.³ B60K *31/00*
U.S. Cl. 180—176 **3 Claims**

1. A constant running speed control system for a vehicle comprising:

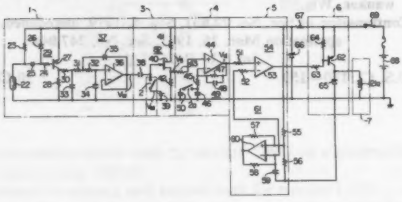
an actuator including a fluid chamber having a pressure-bearing movable film operatively coupled to a speed governing element of the vehicle and an electromagnetic valve for causing intermittent modulation of the pressure

of fluid supplied to said fluid chamber, said actuator functioning to cause displacement of said speed governing element according to the pressure in said fluid chamber;

a manually operable switch means for starting a constant running speed control;

a vehicle speed detecting means for producing a vehicle speed voltage corresponding to the running speed of the vehicle;

a vehicle speed change component extraction means for receiving said vehicle speed voltage from said vehicle speed detecting means, memorizing said vehicle speed voltage at the time of the operation of said manually operable switch and providing an output voltage corresponding to the difference between said memorized vehicle speed voltage and the actual vehicle speed voltage from said vehicle speed detecting means in addition to a predetermined reference voltage;



a filter means having a frequency characteristic adapted to cancel the frequency characteristic of said actuator and receiving said output voltage from said vehicle speed change component extraction means, the gain of said filter means being increased for a rate of change of said output voltage within a range corresponding to a predetermined frequency range;

a modulating means for producing a pulse train signal of an on-off ratio corresponding to the magnitude of the output voltage passed through said filter means;

a power amplifying means for amplifying said pulse train signal from said modulating means, the resultant amplified signal being coupled to said electromagnetic valve in said actuator; and

a circuit for supplying power to said actuator;

said filter means serving to compensate for the delay involved in said actuator in advance to thereby automatically maintain a constant vehicle running speed.

4,359,125

ELECTRONIC SPEED CONTROL SYSTEM FOR VEHICLES

Yoshio Shinoda, Aichi; Akira Kuno, Oobu, and Takeshi Matsui, Aichi, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Jun. 16, 1980, Ser. No. 159,854

Claims priority, application Japan, Jun. 22, 1979, 54-79535

Int. Cl.³ B60K *31/00*

U.S. Cl. 180—179 **3 Claims**

1. A speed control system for an automotive vehicle driven by an internal combustion engine under control of a throttle valve, the control system comprising:

first means for producing a timing signal with a period of time responsive to the actual speed of the vehicle;

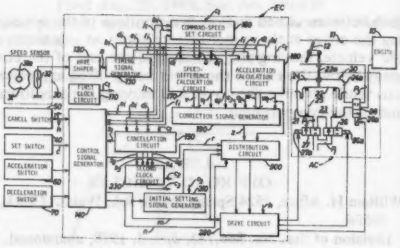
second means for producing a series of clock signals at a frequency inversely proportional to the actual speed of the vehicle;

third means for producing a command signal indicative of a predetermined period of time defined by a desired speed of the vehicle;

fourth means responsive to the timing signal for calculating a first time difference between the predetermined period of time and an instant period of time of the timing signal and for producing a first difference signal indicative of an absolute value of the calculated first time difference and a first sign signal indicative of one of positive and negative signs of the calculated first time difference;

fifth means responsive to the timing signal for calculating a second time difference between respective instant periods of time of the preceding and following timing signals and for producing a second difference signal indicative of an absolute value of the calculated second time difference and a second sign signal indicative of one of positive and negative signs of the calculated second time difference;

sixth means responsive to the timing signal for calculating the first number of the clock signals corresponding with a sum of the absolute values respectively defined by the first and second difference signals when respective signs of the first and second sign signals are identical to each other and for calculating the second number of the clock signals corresponding with a difference between the absolute



values respectively defined by the first and second difference signals when respective signs of the first and second sign signals are opposite to each other, said sixth means selectively producing first and second correction signals respectively indicative of the calculated first number of the clock signals and the calculated second number of the clock signals and ceasing to produce the first and second correction signals when the respective calculated values are zero;

seventh means responsive to the timing signal and one of the first and second correction signals for selectively producing first and second control signals respectively in relation to the positive and negative signs of the second sign signal; and

actuator means for decreasing and increasing the opening angle of said throttle valve respectively in response to the first and second control signals.

4,359,126

METHOD FOR MOUNTING AN EXHAUST SYSTEM IN A MOTORCYCLE

Yasuaki Aiba, Sakado, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 19, 1980, Ser. No. 188,712

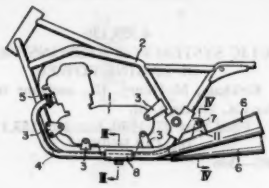
Claims priority, application Japan, Sep. 19, 1979, 54-129831[U]

Int. Cl.³ B60K *13/04*

U.S. Cl. 180—219 **2 Claims**

1. A mounting arrangement of an engine exhaust system in a motorcycle, which comprises a motorcycle frame, an engine mounted on the frame through cushioning means, said engine having an exhaust port at an upper forward part thereof and a bottom rear engine part, and an exhaust system including an exhaust pipe connected at one end thereof with the said exhaust port of the engine and a muffler communicatively connected with the other end of said exhaust pipe, bracket means connecting an intermediate portion of said exhaust pipe to the

bottom rear part of the engine, and muffler mounting means for mounting said muffler to the rear part of the motorcycle frame



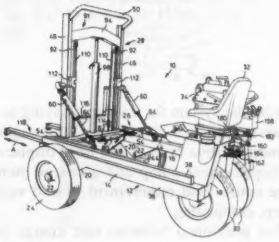
for limited oscillation and movement along its longitudinal axis.

4,359,127

FORKLIFT VEHICLE WITH AUTOMATIC STEERING RETURN

William Arnold, Sutton West, Canada, assignor to Brouwer Turf Equipment Limited, Toronto, Canada

Filed May 29, 1980, Ser. No. 154,569
Claims priority, application Canada, Jun. 21, 1979, 330326
Int. Cl.³ B62D *5/10*
U.S. Cl. 180—252 **4 Claims**



1. In a vehicle having a frame, a wheel mounted on said frame, means for driving said wheel to propel said vehicle, and motor means for selectively driving said wheel through a 360 degree steering arc, the improvement comprising an automatic centering means for returning said wheel to a front steering position in which said vehicle is driven straight forwardly or a rear steering position in which said vehicle is driven straight rearwardly, said centering means comprising: means for sensing the actual steering position of said wheel relative to said frame; manually controlled actuating means having a forward, a reverse, and a neutral condition; and means for controlling said motor means to automatically drive said wheel toward said front steering position only in response to said actuating means being in said forward condition and said sensing means indicating that said wheel is not in said front steering position, and to automatically drive said wheel toward said rear steering position only in response to said actuating means being in said reverse condition and said sensing means indicating that said wheel is not in said rear steering position.

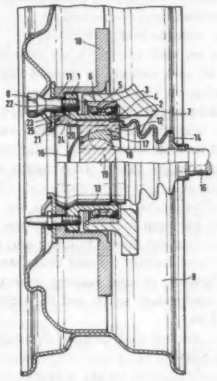
4,359,128

WHEEL HUB BEARING ARRANGEMENT

Werner Krude, Neunkirchen, Fed. Rep. of Germany, assignor to Uni-Cardan Aktiengesellschaft, Siegburg, Fed. Rep. of Germany

Filed Jan. 15, 1980, Ser. No. 112,195
Claims priority, application Fed. Rep. of Germany, Jan. 29, 1979, 2903229
Int. Cl.³ B60K *17/30*
U.S. Cl. 180—258 **2 Claims**

1. Bearing arrangement comprising an annular wheel hub, a constant velocity universal joint mounted in said wheel hub for driving said wheel hub, said constant velocity universal joint comprising a hollow outer joint member and an inner joint member positioned within said outer joint member and a joint shaft extending inwardly from said inner joint member, said wheel hub comprising an annular flange extending transversely of the axis of the universal joint and an inner bearing ring extending in the axial direction of the universal joint and extending inwardly from the radially inner side of said wheel hub, said inner bearing ring forming an axially extending bore with said outer joint member positioned within said bore so that said outer joint member and inner bearing ring rotate together, said wheel hub having wheel holes extending therethrough in the direction of the axis of said inner bearing ring, a brake disc having an intermediate flange positioned in juxtaposed relation to and outwardly from said wheel hub, said intermediate flange having holes therethrough in alignment with the holes in said wheel hub, wheel bolts arranged to extend through a vehicle wheel and through the holes in said intermediate flange and the wheel holes in said wheel hub into threaded engagement with said wheel hub for fixing the vehicle wheel and said brake disc to said wheel hub so that the wheel, said brake disc and wheel hub rotate together, said outer joint member having an outer circumferential surface facing toward the inner surface of said inner bearing ring, the bore in said inner bearing ring being dimensioned so that said

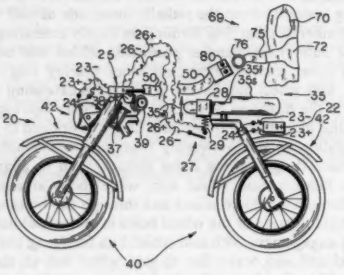


outer joint member with the remainder of said constant velocity universal joint including the joint shaft can be inserted into said inner bearing ring from the outer end thereof from which said wheel hub extends tranversely, wherein the improvement comprises that said outer joint member has an annular extension on the end thereof extending outwardly from said wheel hub, said extension having an annular outer surface with said annular outer surface comprising a first axially extending frusto-conical surface diverging outwardly from the outer end thereof and a second axially extending frusto-conical surface having a maximum diameter similar to the maximum diameter of said first frusto-conical surface and diverging inwardly in the inward direction of the universal joint, the inner surface of said inner bearing ring at the end thereof from which said wheel hub extends transversely having a frusto-conical surface converging inwardly from the end of said inner bearing ring in the inward direction of the universal joint and being complementary to and in surface contact with said second frusto-conical surface of said extension, and said intermediate flange on said brake disc located outwardly of the end of said inner bearing ring and laterally encircling said extension, said intermediate flange having an annular frusto-conical surface formed complementary to and disposed in surface contact with said first frusto-conical surface on said extension so that the frusto-conical surface on said intermediate flange is in diverging relation in the direction toward said inner bearing ring.

4,359,129
MOTORCYCLE SAFETY-RELEASE BACK REST

Gregory K. Schultz, 22386 Gratiot Rd., Merrill, Mich. 48637

Filed Oct. 11, 1979, Ser. No. 83,647
Int. Cl.³ A62B 35/02
U.S. Cl. 180—268 51 Claims



1. A safety-release back rest rig assembly for a motorcycle having forward or stem and rearward or stern terminations and like or equivalent vehicles(s) comprising, in cooperative interrelated associated and combination:

(a) a basic vehicle body structure;

(b) means on said vehicle body structure (a) for seating a driver of said vehicle in appropriately mounted driving disposition on and for said vehicle;

(c) vest-like and equivalent garment apparel means for wearing by said driver of (b), said vest-like means being adapted to well receive and encasingly hold said driver;

(d) at least a single safety strap means attachable and securable at or about its rearwardly-extending end in sling-like, forwardly-disposable fashion to the frontal part of said vest-like garment means (c) for wearing by said driver;

(e) a safety strap(s) means holding and releasing component unit secured fixedly on said body structure of the motorcycle forward of said seating means (b) for said driver, which component upon and by electrical energization is adapted to

(f) receive, anchor and lockingly-engage the forwardly-disposable portion at or near its forward end of each of said therein plugged-in safety strap(s) means (d) when said component (e) is in a "locking" and safety strap-retaining position; and

(g) release and freely disconnect, disanchor and disengage said forwardly-disposable end of each of said safety strap(s) means (d) when said component (e) is in an "open" and safety strap-releasing position;

(h) an electrical switch and circuitry switching unit associated with said seating means (b) responsive for "on" and "off" setting purposes to applied driver weight when one is sitting thereupon and electrically connected with said component unit (e) which is adapted to pass adequate electrical energy by means of interconnecting electrical circuitry;

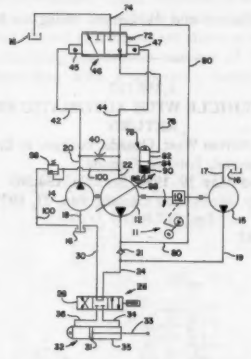
(i) to cause said component unit in said cooperative rig combination assembly to firmly and strongly anchor, engage and lock to close and secure any portion of said forwardly-disposable end(s) of any and all of said safety strap(s) means (d) therein plugged when at least a predetermined portion, if not all, of the total supported weight of said driver in (b) and (c) is mounted and disposed and resting upon said seating means (b); and, conversely

(j) to cause said component unit (e) to quickly, freely and easily disanchor, disengage and open to free and unsecured liberated disposition any portion of said forwardly-disposable end(s) of any and all of said safety strap(s) means (d) therein plugged when more than said predetermined portion, if not all, of the total supported weight of said driver in (b) and (c) is dismounted and neither disposed nor resting upon said seating means (b).

4,359,130
HYDRAULIC SYSTEM FOR RESPONSIVE SPLITTING OF ENGINE POWER

Steven C. Kirkham, McHenry, Ill., assignor to International Harvester Co., Chicago, Ill.

Filed May 27, 1980, Ser. No. 153,119
Int. Cl.³ B60K 17/10
U.S. Cl. 180—306 4 Claims



1. A hydraulic system for a vehicle having an engine developing peak torque at a given speed, the engine arranged to power a motive drive train, a first fixed displacement pump, a variable displacement pump and a charge pump disposed to supply the entire fluid requirement of said variable displacement pump, comprising:

an orifice positioned between said charge pump and said variable displacement pump, said orifice accepting substantially the entire discharge from said charge pump;

control ram means operatively connected to said variable displacement pump to vary the displacement of said variable pump upon the application of fluid pressure to said control ram means;

a conduit extending from the output of one of said fixed and variable displacement pumps to said control ram means;

a speed valve disposed in said conduit, said speed valve being operatively associated with said orifice to shift between positions providing full flow and no flow in said conduit in response to the pressure drop across said orifice, the position of said speed valve being independent of the output pressure of said variable displacement pump;

said hydraulic system being disposed to condition said variable pump for minimum displacement when said engine speed is below said given speed and for conditioning said variable pump for maximum displacement when said engine speed is above said given speed.

4,359,131
METHOD OF GENERATING A SEISMIC SIGNAL EMPLOYING A WATER PISTON

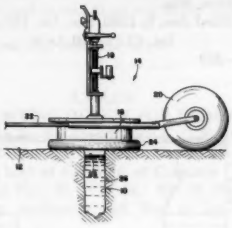
Philip N. Martin, Tulsa, Okla., assignor to Mapco, Inc., Tulsa, Okla.

Continuation-in-part of Ser. No. 963,982, Nov. 27, 1978, Pat. No. 4,223,759. This application Jul. 31, 1980, Ser. No. 174,123
Int. Cl.³ G01V 1/104
U.S. Cl. 181—116 13 Claims

1. A method of generating a seismic signal comprising:

forming a shallow hole in the earth's surface;

at least partially filling the hole with liquid;
positioning a projectile firing apparatus over the hole; and



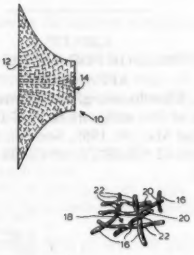
firing a projectile downwardly into the hole, the projectile leaving the firing apparatus and impacting the liquid therein.

4,359,132

HIGH PERFORMANCE SPEAKER DIAPHRAGM

Roy B. Parker, Monmouth, and Daniel R. Levesque, Lewiston, both of Me., assignors to Albany International Corp., Albany, N.Y.

Filed May 14, 1981, Ser. No. 263,767
Int. Cl.³ D04H *1/58;* H04R *7/12*
U.S. Cl. 181—169 **6 Claims**



1. A speaker diaphragm, which comprises:
a plurality of first textile staple fibers which are stable at a given degree of temperature which is above temperature ranges to which the diaphragm will be exposed under conditions of normal use;
a plurality of second, heat-softened and re-hardened textile staple fibers which soften at the given degree of temperature but are stable at temperatures within said temperature ranges;
said first and second fibers being entangled together to form cross-over points in a non-woven fabric, the entanglement being of the character associated with needled, mixed fibers wherein said first and second fibers are separated from each other by void spaces, except where they touch at cross-over points;
the first and second fibers being interlocked at cross-over points;
said entangled and interlocked fibers having been molded under heating conditions in the form of a speaker diaphragm.

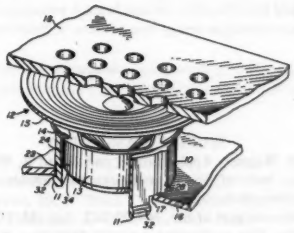
5. A method of making speaker diaphragms, which comprises;
providing a homogeneous blend of a first textile staple fiber, which are stable at a given degree of temperature which is above temperature ranges to which the diaphragm will be exposed under conditions of normal use, and a second textile staple fiber which will soften at the given degree of temperature but is stable at temperatures within said ranges;
needling the blend to obtain a non-woven fabric; and
molding the fabric into a diaphragm shape under sufficient heat and pressure to soften the second fibers and interlock them with the first fibers at points where the first fibers cross-over the second fibers said first fibers being separated from said second fibers at points other than said cross-over points, by void spaces.

4,359,133

RESILIENT SUPPORT FOR ELECTRONIC COMPONENT

Leo V. Krolak, Plantation, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 135,064, Mar. 28, 1980, abandoned.
This application Aug. 24, 1981, Ser. No. 295,403
Int. Cl.³ H04R *1/02;* B65D *55/00*
U.S. Cl. 181—172 **4 Claims**



1. A mounting structure for supporting the speaker for a radio device from the chassis thereof, with the speaker having a pot and a basket with an edge adapted to engage the grill of the device, and wherein the chassis has a support portion for the speaker with an opening therein, such structure including in combination:
an annular member formed of resilient material having an inner surface adapted to receive the pot of the speaker therein, and effecting a clamping action thereon, said annular member including chord-like sections interspersed with arc-like sections, with said chord-like sections being flexed outwardly by the insertion of the speaker pot therein to store energy to tend to move the speaker pot in a predetermined direction,
said member having parts about the exterior thereof which have an extent greater than that of the opening and engage one side of the support portion of the chassis, and
a plurality of fingers extending from one end of said annular member and adapted to be inserted through the chassis opening, said fingers each having an outwardly extending hook for engaging the side of the support portion opposite to said one side thereof to hold said member in position thereon,
said member being flexible to allow inward movement of said hooks for passage through the chassis opening in the absence of the speaker port therein, with such speaker port rendering said member more rigid to restrain movement of said fingers so that said annular member is held on the chassis.

4,359,134

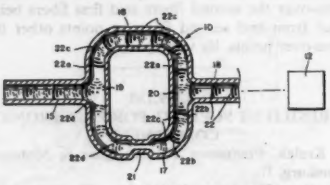
SOUND SUPPRESSOR FOR FLUID FLOW LINES

Barry N. Jackson, De Pere, Wis., assignor to American Hospital Supply Corporation, Evanston, Ill.

Filed Dec. 5, 1980, Ser. No. 213,412
Int. Cl.³ F01N *1/06*
U.S. Cl. 181—230 **13 Claims**

1. A low-resistance muffler for pulsatile fluid flow lines,

comprising passage-providing means defining a first trunk passage adapted for communication at one end to a device capable of generating pulsatile fluid flow; a second trunk passage spaced from said first passage; and a pair of branch passages interposed between and communicating with both of said



trunk passages; one of said branch passages being provided with a flow-restricting and pulse-reflecting orifice substantially smaller in cross section than elsewhere throughout said passages for partially reflecting pulses back toward said first trunk passage and into the other of said branch passages; said other of said branch passages being free of flow restriction.

4,359,135

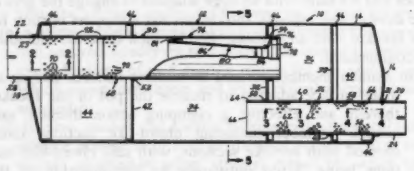
MUFFLER ASSEMBLY

Wayne M. Wagner, Apple Valley, and David E. Winnes, Bloomington, both of Minn., assignors to Donaldson Company, Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 71,542, Aug. 31, 1979, Pat. No. 4,267,899. This application Apr. 21, 1980, Ser. No. 142,663

Int. Cl.³ F01N *1/02, 1/08*

U.S. Cl. 181—266 **11 Claims**



1. In a muffler, for the output gas of a machine, in combination:

a housing;

separation means comprising a plurality of partitions dividing said housing into a first expansion chamber, a flow chamber, a resonator chamber, and a second expansion chamber;

inlet means comprising a first tube, passing in turn through said first expansion chamber, a partition, said flow chamber, a partition between said flow chamber and said resonator chamber, and opening into said resonator chamber, said first tube being laterally perforated at a first site to enable communication with said first expansion chamber, and at a second site to enable restricted flow of gas into said flow chamber; and

outlet means comprising a second tube, opening from said flow chamber and passing through said partition between said flow chamber and said resonator chamber, said resonator chamber, said second expansion chamber and a partition therebetween, said tube being laterally perforated at a first site to enable communication with said second expansion chamber;

said partition between said flow chamber and said resonator chamber being apertured to enable limited flow of said gas through said resonator chamber.

4,359,136

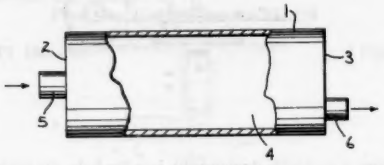
MUFFLER CONSTRUCTION

Larry J. Eriksson, Madison, Wis., assignor to Nelson Industries Inc., Stoughton, Wis.

Filed Jun. 9, 1980, Ser. No. 157,494

Int. Cl.³ G03B *1/08*

U.S. Cl. 181—269 **6 Claims**



2. A device for attenuating sound energy, comprising an outer body, a pair of transverse walls extending across said body and defining an internal chamber, said chamber being free of internal obstructions, an inlet conduit disposed in one of said walls for introducing gas into said chamber, an outlet conduit disposed in the other of said walls for discharging gas from said chamber, said inlet conduit being disposed on the axis of said body and said outlet conduit being offset from said axis and disposed along a radius and located on a pressure nodal circle of the first symmetric higher order mode of the chamber.

4,359,137

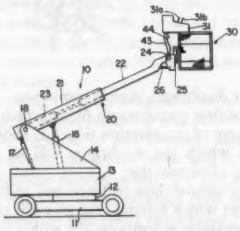
SAFELOAD INDICATOR FOR AERIAL LIFT PLATFORM APPARATUS

Ernest J. Merz, Chambersburg, and Charles W. Walters, Waynesboro, both of Pa., assignors to JLG Industries Inc.

Filed May 30, 1980, Ser. No. 154,757

Int. Cl.³ B66F *11/04;* **G01D** *13/12*

U.S. Cl. 182—2 **16 Claims**



1. In a workman's lift platform apparatus comprising a telescopic boom pivotally mounted for luffing movement about a horizontal axis and having base and fly sections, means for extending and retracting the telescopic boom, means for luffing the boom, a workman's platform adjacent the outer end of the boom, a horizontal pivotal connection between the platform and the boom parallel to said horizontal axis, means for maintaining the platform level during luffing movement of the boom, and control means on the workman's platform for controlling boom luffing and boom extension, the improvement comprising:

means on the fly section of the boom visible to a workman at said control means for visually indicating the amount of extension of the boom,

an indicator drum on said platform adjacent said control means having thereon visual indicating means corresponding to the indicating means on said boom fly section,

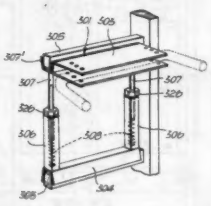
means for supporting said indicator drum on a horizontal axis parallel to said first mentioned horizontal axis,
means for driving said drum proportionately to the angle of the boom to the horizontal comprising cable means connected at one end to said drum and at the other end to said boom, and
a cursor adjacent said indicator drum.

4,359,138

SUPPORTING DEVICE FOR LADDERS

Walter Kümmerlin, In den Fressäckern 6, 7120 Bietigheim-Bissingen, and Nikolaus A. Kümmerlin, Humboldstrasse 26, 7220 Schwenningen, both of Fed. Rep. of Germany

Filed Nov. 30, 1979, Ser. No. 99,175
Claims priority, application Fed. Rep. of Germany, Dec. 1, 1978, 2851987
Int. Cl.³ E06C *7/14, 7/44, 7/48*
U.S. Cl. 182—214 **23 Claims**



1. A supporting device for ladders comprising
supports,
at least two connecting means for operatively connecting the supports respectively with rungs of a ladder, said connecting means form at least one pair of connecting parts which are adapted to receive two rungs of the ladder in opposite directions,
said connecting parts being adjustably mounted at variable distances from each other,
each said connecting means includes a rod,
a displaceable sleeve is mounted longitudinally displaceably on said rod,
one of said connecting parts of said one pair is rigidly connected with said rod,
the other of said connecting parts of said one pair is rigidly connected with said sleeve,
two detachably mounted sleeves fixed to each of said rods, respectively,
single struts are rigidly connected to said displaceable sleeves and to said two detachable mounted sleeves, respectively.

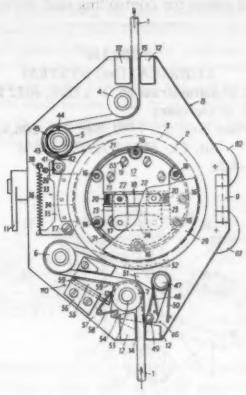
4,359,139

LIFESAVING APPARATUS FOR ROPING DOWN PERSONS

Hans Bloder, Wienerstrasse 46/1, A-8605 Kapfenberg, Austria

Filed Jul. 30, 1980, Ser. No. 173,686
Claims priority, application Austria, Jul. 31, 1979, 5248/79
Int. Cl.³ A62B *1/10*
U.S. Cl. 182—234 **23 Claims**

1. A life saving equipment for roping down persons along a rope, comprising a rack being passed by the rope and being connectable to the person to be roped down, a rope pulley being rotatably supported within said rack and being provided on its circumference with a rope groove for said rope which is guided within said rope groove for a looping angle of more than 180°, at least one brake member being provided for being pressed against the rope pulley for braking said rope pulley, a setting mechanism for adjusting the braking force of said brake member by the person to be roped down, and a monitoring means checking the presence of the rope within said rack, said monitoring means having a sensor member being movably supported by said rack and pressed against the rope, which



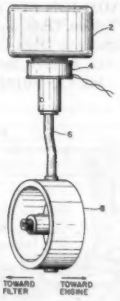
sensor member is operatively connected to a rope clamping device for clamping the rope in case of a rope shortage.

4,359,140

ENGINE AUXILIARY OILER

James S. Shreve, 10027 Black Court, Fairfax, Va. 22032

Filed Jul. 7, 1980, Ser. No. 166,005
Int. Cl.³ F01M *1/00, 7/00*
U.S. Cl. 184—6.3 **7 Claims**



1. A device, interposed within the primary lubrication system of an internal combustion engine for providing lubricant under pressure to the engine during pre-start or failure of the primary lubrication system; the primary lubrication system including a lubricant under pressure during operation of the engine, a lubricant filter and means for mounting the filter on the engine; comprising:
an adaption plate interposed between said filter and said means for mounting said filter;
a first reservoir for storing a lubricant under pressure and maintaining said lubricant under pressure;
directing means within said adaptor plate, for diverting a first portion of said lubricant flowing through said primary lubrication system;
first fluid communication means for communicating said first portion of said lubricant from said diverting means to said first reservoir;
first releasing means for releasing said lubricant stored in

said first reservoir into said primary lubrication system through said first fluid communication means; and

first control means for controlling said releasing means.

4,359,141

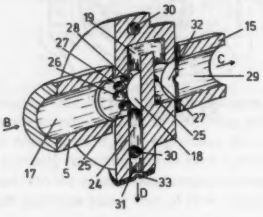
LUBRICATING SYSTEM

Horst Schnell, Donatusstrass 65, T. 19229, 4052 Korschenbroich 1, Fed. Rep. of Germany

Filed Nov. 21, 1980, Ser. No. 208,932

Int. Cl.³ F01M *11/02, 11/08*

U.S. Cl. 184—6.26 **6 Claims**



1. A distribution system for conducting a mixture of oil droplets and air to surfaces to be lubricated, comprising a main inward flow duct **(1)** connected to a source of oil droplets dispersed in air, and at least one distributor unit **(2)** connected to said inlet duct; said distributor unit including a baffle means containing at least two alternately and symmetrically spaced groups of conduits connecting with said inlet duct; each said groups of conduits leading to a separate outlet channel.

4,359,142

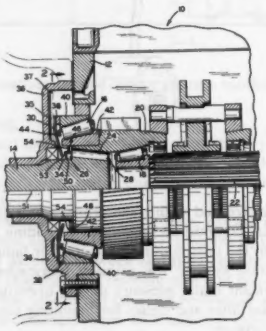
IMPELLER LUBRICATION SYSTEM FOR TRANSMISSION POCKET BEARING

Donald C. Schultz, Toledo, Ohio, and Charles R. Jones, Ottawa Lake, Mich., assignors to Dana Corporation, Toledo, Ohio

Filed Feb. 8, 1979, Ser. No. 10,441

Int. Cl.³ F01M *9/06*

U.S. Cl. 184—11 R **7 Claims**



1. In a transmission having a first shaft, a pocket bearing contained within said first shaft, and a second shaft journalled within said pocket bearing; an improvement comprising an impeller lubrication system for said pocket bearing, said system having:

(a) an oil collector region adjacent one of said shafts;

(b) at least one lubrication port through said one of said shafts, said port having an entrance in communication with said oil collector region and an exit in communication with said pocket bearing;

(c) an impeller fixed to said one of said shafts at said collector region and in communication with the entrance of said port for axially forcing oil through said port to said pocket bearing, said impeller having at least on oil deflector tab lined with said entrance; and

(d) a lip positioned radially outwardly of said oil deflector tab, said lip abutting said tab at a substantially right angle.

4,359,143

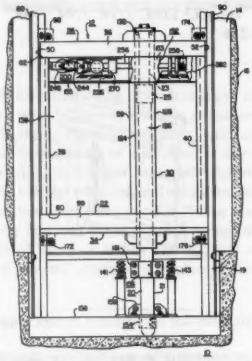
ELEVATOR SYSTEM

Leigh F. Jackson, Guilford Township, Franklin County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 22, 1980, Ser. No. 219,102

Int. Cl.³ B66B *13/00*

U.S. Cl. 187—52 R **9 Claims**



1. An elevator system, comprising:

an elevator car including a front portion defining an entranceway;

said front portion including a car frame having an upper beam member;

a transom in said elevator car below said upper beam member, said transom including a horizontal portion disposed over said entranceway;

door means;

door mounting means mounting said door means for slideable movement adjacent to the front portion of said elevator car to open and close said entranceway;

door operator means operably connected to said door means, said door operator means being mounted below said upper beam member and concealed from view within the elevator car by said transom; and

a swing return panel at the front portion of the elevator car, with the horizontal portion of the transom being removable to gain access to a first portion of the door operator means, and with the remaining portion being accessible via the swing return panel, enabling access to be gained to the door operator means from within the elevator car.

4,359,144

SELF-ADJUSTING BRAKE

David L. Coleman, and John J. Kass, both of Dubuque, Iowa, assignors to Deere & Company, Moline, Ill.

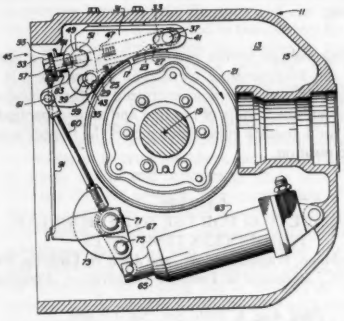
Filed Oct. 24, 1980, Ser. No. 200,235

Int. Cl.³ F16D *49/12, 65/56*

U.S. Cl. 188—77 R **3 Claims**

1. In a brake construction of the type including a brake band substantially encircling a brake drum mounted on a support for rotation about a fixed axis, the brake band having first and second spaced ends connected to a control linkage selectively operable between a normal released condition, towards which the linkage is biased and wherein the brake band ends are positioned such that the band is spaced from said drum, and a

brake-applying condition, wherein the brake band ends are positioned closer together than when in their released positions and the band is in engagement with said drum, said control linkage having first and second anchor pins respectively connected to the first and second ends of the brake band and extending parallel to said axis, said support having means guidingly retaining said first and second anchor pins for limited movement towards and away from each other, a lever having said second anchor pin mounted therein, a third anchor pin mounted in said lever, said support including surface means defining a seat-shaped complementary to and disposed so as to receive said third anchor pin when the linkage is in said released condition, a motion-transmitting link connected between said first and third anchor pins and including rotatable ratchet wheel means operable for adjusting the released position of said first anchor pin so as to compensate for brake band



wear, wherein the improvement comprises: an adjusting means for indexing said ratchet wheel means; a control linkage actuating means for causing said control linkage to assume a released condition or a brake applied condition, said adjusting means being connected between said ratchet wheel means and control linkage actuating means and operable in response to a predetermined movement of said actuating means to a brake applied condition to index said ratchet wheel means upon the linkage returning to said released condition, said control linkage actuating means including: a hydraulic cylinder having a cylinder arm linearly movable; a connecting link pivotally mounted to said lever at one end; a second motion transmitting link pivotally mounted to said cylinder arm at one end and pivotally mounted to the housing at the other end, said connecting link being pivotally mounted along said second motion transmitting link such that movement of said cylinder arm causes said lever to rotate about said second or third pins.

4,359,145

DEMOUNTABLE CLUTCH SUPPORT FOR GEAR TRANSMISSION

Martin Huff, Tettnang, Fed. Rep. of Germany, assignor to Zahnradfabrik Friedrichshafen Aktiengesellschaft, Friedrichshafen, Fed. Rep. of Germany

Filed Apr. 22, 1980, Ser. No. 142,680

Claims priority, application Fed. Rep. of Germany, Apr. 23, 1979, 2916346

Int. Cl.³ F16D *25/12*

U.S. Cl. 192—112 **10 Claims**

1. A transmission system comprising:

a housing;

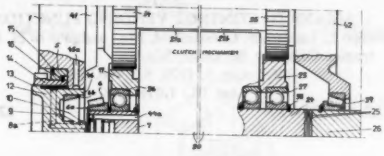
a drive shaft journaled in said housing;

driven shaft means offset from said drive shaft and journaled in said housing;

fluid-actuatable clutch means in said housing for optionally transmitting torque from said drive shaft to said driven shaft means, said clutch means being traversed by intermediate shaft means having two oppositely projecting extremities coaxial with said drive shaft;

a first pair of gears idling on said extremities and meshing with a second pair of gears on said driven shaft means, said first pair of gears being couplable with said intermediate shaft means by actuation of said clutch means;

a coupling between said drive shaft and one extremity of said intermediate shaft means, said coupling including interengaging axially extending formations on said drive shaft and said one extremity;



a retaining member detachably secured to said housing; and bearing means axially and radially suporting the other extremity of said intermediate shaft means on said retaining member, said other extremity and said retaining member being provided with communicating passages for the selective admission of actuating fluid to said clutch means, said formations being disengageable by an axial shift of said clutch means relative to said housing after detachment of said retaining member to facilitate radial extraction of said clutch means jointly with said intermediate shaft means and said first pair of gears from said housing.

4,359,146

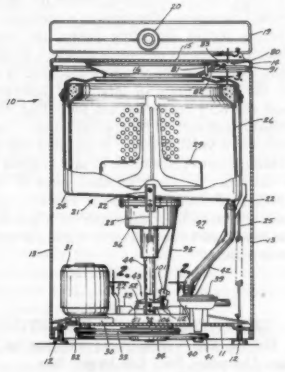
ROTATION SENSING CONTROL

Gordon J. Davis, Newton, Iowa, assignor to The Maytag Company, Newton, Iowa

Filed Dec. 15, 1980, Ser. No. 216,450

Int. Cl.³ F16P *3/08*; B04B *7/06*; F16D *35/00*

U.S. Cl. 192—136 **22 Claims**



1. A rotation sensing control for use in an apparatus including structure enclosing a rotatable member and having a movable member operable between a first closed posture and a second open posture for providing access to said rotatable member, the combination comprising: control means operable for controlling movement of said movable member between said first and second postures; rotation sensing means associated with said rotatable member and including a driving member having a first fluid shear surface and rotatable with said rotatable member, a driven member supported for rotation relative to said driving member and defining a second fluid

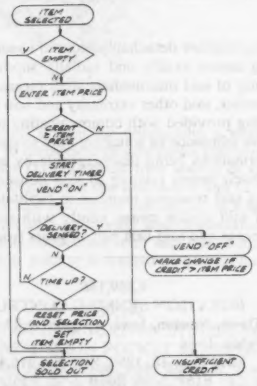
shear surface juxtaposed to said first fluid shear surface in a fluid coupling relationship, a fluid reservoir associated with one of said driving or driven members, and a fluid retained in said reservoir to form a fluid coupling between said first and second fluid shear surfaces; and means interconnecting said driven member and said control means, said driven member being arcuately movable by said fluid coupling responsive to movement of said rotatable member to effect operation of said control means for maintaining said movable member in said closed posture to prevent access to said rotatable member.

4,359,147

MEANS TO CONTROL VENDING FUNCTIONS

Joseph L. Levasseur, Chesterfield, Mo., assignor to H. R. Electronics Company, St. Louis, Mo.

Filed Aug. 6, 1979, Ser. No. 63,782
Int. Cl.³ G07F 9/02
U.S. Cl. 194—1 N **22 Claims**



1. A control circuit for a vending or like machine comprising a vendor control system including means for entering credit, means for selecting a particular vend at a particular vend price, vend producing means including means for energizing the vend producing means to deliver a product to the customer, sensor means located on the vending machine in a position to respond to the occurrence of any vend delivery produced thereby, said delivery sensor means including means for enabling a control response to be applied to the vendor control system whenever a vend delivery is initiated but is ineffective for some reason, means responsive to said control responses to enable the customer to select another vend or to be able to receive a refund of the credit he has entered, and means to inhibit future selection by a customer of a product that was selected but has failed to be delivered during a vending operation for some reason.

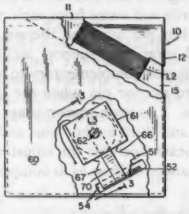
4,359,148

COIN ACCEPTOR OR REJECTOR

Ronald C. Davies, Las Vegas, Nev., assignor to Third Wave Electronics Company, Inc., Las Vegas, Nev.

Filed Oct. 28, 1980, Ser. No. 201,583
Int. Cl.³ G07F 3/02
U.S. Cl. 194—100 A **11 Claims**

1. A coin acceptor or rejector apparatus for use in coin-operated machines and the like, comprising a coin chute having a slot for receiving a coin, said chute having a coin acceptance portion and a coin rejection portion, a flapper controlling the direction of movement of coins to one or the other of said portions, an oscillator circuit adapted to oscillate at a substantially constant amplitude, a sensing coil surrounding the chute at its upper end adjacent said slot and actuated by a coin passing therethrough, said sensing coil upon receipt of a coin having its Q substantially decreased and having energy losses caused by eddy currents being dissipated by the coin and by the magnetic hysteresis of the coin whereby the effective resistance of the oscillator circuit is reduced and the current flow therethrough is increased, comparative circuitry constituting a first parameter for discriminating the change in current



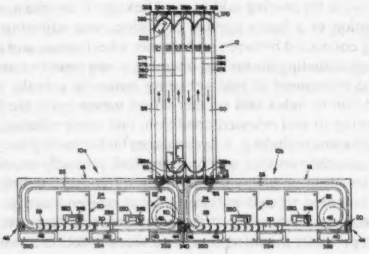
and resulting voltage within predetermined limits, a second parameter for discriminating by change in frequency in the oscillator circuit, and a solenoid energized by the coincidence of the predetermined limits of the first and second parameters prescribed for a genuine coin which moves the flapper to coin acceptance position.

4,359,149

ACCUMULATOR FOR USE WITH MODULAR PRODUCTION LINE UNITS

Irving Erlichman, Wayland, Mass., and John W. Lothrop, Windham, N.H., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Aug. 4, 1980, Ser. No. 175,061
Int. Cl.³ B65G 1/00
U.S. Cl. 198—347 **1 Claim**



1. An accumulator usable with a production line formed by a plurality of production units for receiving in sequence a plurality of product supporting carriers advanced thereonto from one such production unit, for advancing the carriers along a path of a given length on said accumulator at a given rate, and for thereafter effecting advancement of the carriers in sequence onto the next production unit in the line, the carriers being of the type including a generally rectangular standardized base section of given dimensions, said accumulator comprising:

a table having an upwardly facing top horizontal surface;

a plurality of endless conveyors mounted on said table in side-by-side parallel relation for sequentially advancing a plurality of the carriers therealong in succession from a first said conveyor to a last said conveyor, said conveyors being designated in successive numerical order starting with said first said conveyor and being configured so that each of said odd-numbered conveyors are continuously movable in a first direction away from the production line and each of the even-numbered conveyors are continuously movable in a second direction opposite said first

direction toward the production line, each of said conveyors being movable along its own corresponding closed loop path having a major portion thereof adjacent said table top surface and along which said conveyor advances the carriers, said major portions of said closed loop paths cumulatively defining a serpentine carrier path of travel of said given length;

means for simultaneously driving said odd-numbered conveyors in said first direction and said even-numbered conveyors in said second direction at a uniform given rate; and

means for guiding carriers along said path of travel on said accumulator, said guide means including means for defining an entrance gate for guiding the carriers received from the one production unit onto said first conveyor, means for defining an exit gate for guiding the carriers from said last conveyor onto the next production unit, and passive means located adjacent ends of said major portions of said conveyors between said entrance and exit gates and responsive to motion imparted to the carriers by next adjacent conveyors for guiding the carriers so that they are displaced from one conveyor onto the next successive adjacent conveyor and are turned through approximately 180° in response to said displacement, said passive guide means including a plurality of turnaround guide bars, each located adjacent ends of two next adjacent conveyors, and a plurality of fulcrum members, each spaced from a corresponding one of said turnaround guide bars and located between its next adjacent conveyors, each of said turnaround guide bars including a substantially straight section angled across one conveyor moving toward said turnaround guide bar and engageable by one longitudinally extending side of the rectangular carrier base section for deflecting the leading end of the carrier off the one conveyor and onto the next conveyor such that the geometrical center of the base section is beyond said corresponding fulcrum member which is engageable by the opposite longitudinally extending side of the base section and acts as a fulcrum about which the base section pivots for facilitating the turning of the carrier, each said turnaround guide bar also including a rounded section following said straight section and facing the next adjacent conveyor moving away from said turnaround guide bar for guiding the carrier around through said turn.

4,359,150

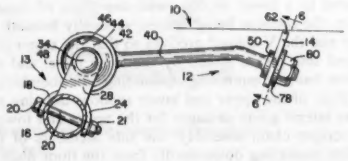
CONVEYOR BELT CLEANER

Michael A. Bowman, Macomb; Steven R. Frank, Mineral, both of Ill.; Richard P. Stahura, Springdale, Pa., and Robert T. Swinderman, Kewanee, Ill., assignors to Martin Engineering Company, Neponset, Ill.

Continuation-in-part of Ser. No. 148,134, May 9, 1980, abandoned. This application Sep. 30, 1981, Ser. No. 307,170

Int. Cl.³ B65G *45/00*

U.S. Cl. 198—497 **13 Claims**



1. A conveyor belt cleaner including an arm having a first end adapted to be connected to a support mounted transverse to the direction of conveyor belt travel and a second end adapted to support a belt cleaner blade;

a belt cleaner blade secured on said second end of said arm and adapted to contact said conveyor belt;

positioning means associated with said arm and said blade to permit rotation of said blade about a central axis of said arm, said positioning means including one or more stops to limit the rotation of said blade about said arm within predetermined limits.

4,359,151

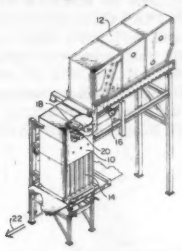
DISTRIBUTION APPARATUS

Joseph A. Fyie, and Thomas E. Peters, both of Boise, Id., assignors to Morrison-Knudsen Forest Products Company, Inc., Boise, Id.

Filed Oct. 27, 1980, Ser. No. 201,043

Int. Cl.³ B65G *47/19*

U.S. Cl. 198—525 **11 Claims**



1. Apparatus for receiving a metered flow of discrete particles of lignocellulosic material and uniformly distributing the particles uniformly over a predetermined area as they are allowed to free-fall by gravity through the distribution apparatus, comprising:

a pair of spaced-apart, contrarotating squirrel-cage rolls, each mounted for rotation about their respective longitudinal axes in a direction opposite to the direction of flow of the discrete particles of lignocellulosic material therethrough, the pair of rolls positioned to receive the flow of freely falling particles so that a first portion of the flow passes between the spaced-apart rolls while second and third portions of the flow are directed outwardly from the first portion of the flow by the contrarotating rolls;

multiple chambers positioned beneath the contrarotating, squirrel-cage rolls for receiving the particles of the first, second and third portions of the flow;

a plurality of individually adjustable guide vanes positioned in the flow of the second and third portions for adjusting the distribution of the second and third portions of the flow laterally of the direction of flow of the portions; and

a plurality of rotating squirrel-cage distribution rolls, one mounted within each of the multiple chambers, each distribution roll positioned with its respective longitudinal axis substantially parallel to the longitudinal axes of the contrarotating, squirrel-cage rolls for evenly distributing the respective first, second and third portions of the flow passing therethrough.

11. A method of uniformly distributing particles of lignocellulosic material delivered to a distribution apparatus as a mat of discrete particles for distribution by gravity flow of the particles through the distribution apparatus to the inlet area of an electrostatic orientation cell, comprising:

breaking up a mat of discrete lignocellulosic particles,

allowing the particles to flow between a pair of spaced-apart, contrarotating rolls rotating in a direction opposite to the direction of flow of the discrete particles therethrough, a first portion passing between the spaced-apart, contrarotating rolls, and second and third portions deflected from the first portion by the contrarotating rolls into second and third portions which pass through the respective contrarotating rolls;

allowing the three portions to pass into respective distribu-

tion chambers positioned beneath the contrarotating, squirrel-cage rolls, each of the distribution chambers including therein a squirrel-cage distribution roll; and

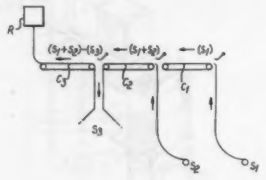
evenly distributing the flow of particles passing through the respective distribution chambers with the respective squirrel-cage distribution rolls over the discharge area of the respective chamber.

4,359,152

PRODUCTION LINE FLOW CONTROL

Jerzy W. Czoch; Douglas J. W. Seagrove; Robert J. Green, and Martin D. Morgan, all of London, England, assignors to Molins, Ltd., London, England

Filed Feb. 22, 1978, Ser. No. 879,878
Int. Cl.³ B65G *43/08*
U.S. Cl. 198—572 **11 Claims**



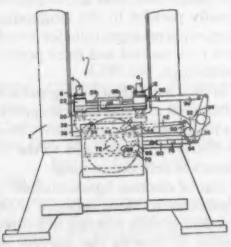
1. A control circuit for a conveyor in an article conveyor system including a junction at which the said conveyor meets at least one other conveyor, the said circuit comprising, means for producing a signal representing the net flow of articles towards or away from the junction on the at least one other conveyor; a sensor means including a sensor circuit arranged to produce a signal dependent upon the deviation of one of the number and level of articles in the junction from one of a desired number and desired level of articles; means for altering the sensitivity of the sensor circuit in accordance with the net flow signal, and means for controlling the motor of the said conveyor at a speed proportional to the sum of the net flow signal and the signal of the sensor circuit.

4,359,153

THREE AXIS TRANSFER APPARATUS

Ralph D. Gerben, Glen Burnie, and Harry J. Walters, Fallston, both of Md., assignors to M. S. Willett, Inc., Hunt Valley, Md.

Continuation of Ser. No. 919,591, Jun. 27, 1978, Pat. No. 4,256,218. This application Jul. 8, 1980, Ser. No. 166,931
Int. Cl.³ B65G *25/02*
U.S. Cl. 198—621 **5 Claims**



1. Transfer apparatus comprising

a pair of spaced gripper bars extending along a transport path.

axial moving means connected to the gripper bars for moving the gripper bars in the direction of the transport path,

vertical moving means connected to the gripper bars for moving the gripper bars in the vertical direction,

transverse moving means connected to the gripper bars for moving the gripper bars transversely to the transport path,

cam drive means having three cams, each of said cams connected to a different one of said moving means for generating the gripper bar motion associated with said moving means to which said cam is connected,

said transverse moving means comprising,

a pinion rotatably mounted on a vertical axis between the gripper bars,

horizontal racks connected to transversely slideable blocks and extending inwardly into engagement with the pinion, the racks connected to one of the blocks engaging the side of the pinion opposite the side engaged by the racks connected to the other of the blocks,

one of the cams driveably connected to one of the blocks for moving the block in a transverse direction, the racks connected to said block acting through the pinion and racks connected to the other of the blocks to move said other of the blocks in the opposite transverse direction,

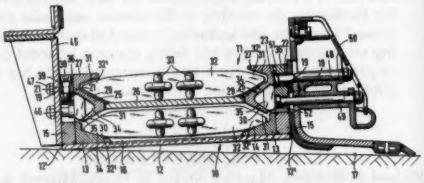
the gripper bars being connected to the blocks for transverse movement therewith and for axial and vertical movement with respect thereto.

4,359,154

SCRAPER-CHAIN CONVEYORS FOR MINERAL MINING

Helmüt Temme, Im Eickel, Fed. Rep. of Germany, assignor to Gewerkschaft Eisenhutte Westfalia, Lunen, Fed. Rep. of Germany

Filed Apr. 4, 1980, Ser. No. 137,123
Claims priority, application Fed. Rep. of Germany, Apr. 18, 1979, 2915584
Int. Cl.³ B65G *19/28*
U.S. Cl. 198—735 **16 Claims**



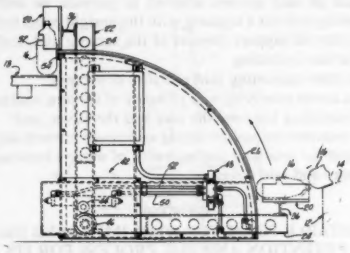
1. In a scraper-chain conveyor for use in mineral mining and composed of a series of pans arranged end-to-end along which a scraper-chain assembly is circulated in upper and lower runs, each pan being composed of side walls adjoined by a floor plate, each side wall having a central V-shaped groove in its exterior aligned with said floor plate; the improvement comprising each pan is composed of an upper section detachably secured to a lower section, with the plane of separation between the sections being spaced vertically beneath the floor plate and the V-shaped grooves so that the upper section has shaped side means joined by the floor plate, and the lower section has corresponding upstanding side members, the side members of the upper and lower sections defining upper and lower lateral guide passages for the upper and lower runs of the scraper-chain assembly, the side members of the upper section projecting downwardly from the floor plate whereby the lower guide passages are formed partly by the side members of both the upper and lower sections, the lower section of each pan being provided with side structures which extend vertically upwardly to overlap the side members of the upper section of the pan, the said side structures being provided with shaped pockets at their end regions open to the inside of the lower section and serving to receive coupling members used to connected the pans together.

4,359,155

BOTTLE TRANSFER ASSEMBLY

Earl H. Brazeal, Smyrna, Del., assignor to Hoover Universal, Inc., Ann Arbor, Mich.

Filed Jun. 9, 1980, Ser. No. 157,570
Int. Cl.³ B65G *47/24*
U.S. Cl. 198—409 **10 Claims**



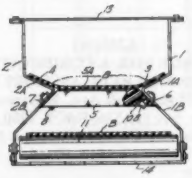
1. A bottle transfer assembly for transferring bottles from a horizontal position at a first elevation to a vertical upright position at a second elevation and releasing the upright bottles at the second elevation onto a suitable receiving member, characterized in that said assembly comprises a carrier, transfer means connected to said carrier for imparting reciprocal movement to the carrier in a path defined by a quarter of a circle located in a vertical plane wherein one radius of the quarter circle is horizontal and another radius of the quarter circle is vertical, and an arcuate slide member located in said vertical plane in generally parallel relationship to and radially inwardly of said path, said carrier having a generally tubular shape and being open at opposite ends, the axis of said carrier extending towards the center of said circle so that a bottle in a horizontal position can be inserted bottom-first into one end of said carrier at the elevation of said one radius and with said bottom traveling on said slide can be transferred by said transfer means to said second elevation, said slide member terminating substantially at said vertical radius so that said bottle can travel off said slide member and be released bottom-first from the other end of said carrier at said second elevation for deposit of the bottle in an upright position on said receiving member.

4,359,156

BELT CONVEYOR

Fred M. Austin, 1040 Arrowsmith, Eugene, Oreg. 97402

Filed Jul. 24, 1980, Ser. No. 171,735
Int. Cl.³ B65G *15/60*
U.S. Cl. 198—841 **4 Claims**



1. A conveyor for light materials comprising,

an endless belt,

side members of irregular section each having an upwardly and outwardly inclined surface partially supporting the conveyor belt,

cross members of a synthetic non-metallic material located at spaced intervals transversely of the conveyor centerline, said cross members terminating in end walls in abutment with said side members, threaded fastener means passing through said cross member end walls and securing said cross members intermediate said side members in a detachable manner, each cross member having an upper surface in supporting sliding contact with the underside of the belt, said cross members additionally serving as structural members joining said side members in a rigid spaced apart manner,

pulleys about which the belt is reversed providing upper and lower belt runs, one of said pulleys being a motor driven pulley, and

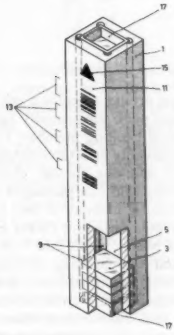
additional belt supporting means extending transversely of the conveyor and at spaced intervals therealong to support the remaining run of the conveyor belt.

4,359,157

PACKING FOR A STACK OF RECTANGULAR, PLATE-SHAPED PARTS

Hans W. Horstmann, Heide Holst, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 16, 1980, Ser. No. 169,332
Claims priority, application Fed. Rep. of Germany, Jul. 21, 1979, 2929716
Int. Cl.³ B65D *83/00, 85/62;* B65G *59/00, 1/08*
U.S. Cl. 206—328 **2 Claims**



1. A package for a stack of rectangular, plate-shaped parts such as electronic components to be subsequently utilized, which comprises a longitudinal tubular container having a rectangular internal cross section corresponding to the parts to be accommodated, each internal wall of said container being planar, said parts being movable through said container and also being separately and successively removable from said container when they are utilized, and a longitudinally extending recess at each internal corner of said tubular container to facilitate the movement of said parts through the container.

4,359,158

BLISTER PACK FOR STORAGE AND DISPLAY OF ELONGATED ARTICLES AND THE LIKE

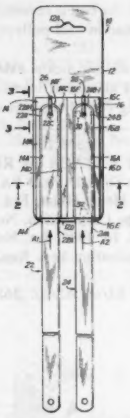
Donald Gringer, 1513 Olmstead Ave., New York, N.Y. 10462

Filed Apr. 20, 1981, Ser. No. 255,445
Int. Cl.³ A45C *11/26*
U.S. Cl. 206—349 **9 Claims**

1. A package for packaging at least one slender elongated article having an associated longitudinal extent, said package comprising:

a backing member comprising a substrate formed of a relatively stiff sheet, said backing member having a longitudinal extent substantially less than the associated longitudinal extent of said one slender elongated article, said one slender elongated article having a distal end and a proximal end with said distal end of the packaged slender elongated article extending substantially beyond the longitudinal extent of said backing member; an open ended blister pack positioned on said backing member substrate com-

prising three contiguous sides forming a U-shaped margin joined to said backing member substrate for defining a slender open-ended blister pack enclosure region on said backing member substrate for the proximal end of said one slender elongated article, said distal end of said packaged



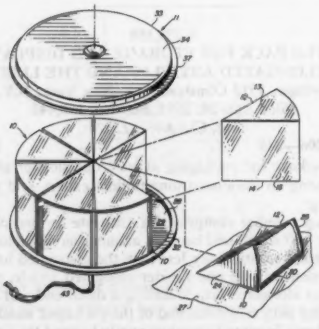
slender elongated article extending outwardly from said open-ended blister pack substantially beyond the longitudinal extent of said backing member; and removable fastening means removably insertable through said packaged proximal end of said one slender elongated article for removably securing said one packaged slender elongated article to said backing member in said open-ended blister pack, said removable fastening means extending through said open-ended blister pack, said one packaged article proximal end and said backing member; whereby said removable fastening means facilitates removable retention of said one packaged article proximal end to said backing member within said open-ended blister pack while said open-ended blister pack facilitates lateral retention of said fastened one packaged article proximal end to said backing member.

4,359,159

CARTON ASSEMBLY FOR PRESLICED PASTRY

Clarice F. Pollard, 4502 N. 36th St., Phoenix, Ariz. 85018

Filed Apr. 3, 1980, Ser. No. 136,974
Int. Cl.³ A45C *11/20*
U.S. Cl. 206—551 **6 Claims**



1. A carton assembly for holding and storing a plurality of individually servable pastry segments, each of said segments having normal top, bottom and sides and a finite height, said carton assembly comprising:

a. a plurality of servers, each adapted to hold one of said pastry segments and having an upright panel having a height greater than the height of a segment, a first and second flap extending from the upright panel, said first flap adapted to be placed under a segment and said second flap adapted to extend over the segment on the first flap, each of said servers adapted to provide an individual serving unit for a segment with the upright panel being the horizontal support element of the serving unit; and

b. a holder including

i. a tray supporting said plurality of servers,

ii. a cover overlying said plurality of servers, said servers extending between the tray and the cover, and

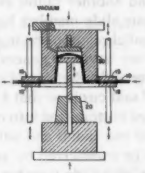
iii. retention means for urging said cover towards said tray and for retaining said plurality of servers between said tray and said cover.

4,359,160

NESTABLE FOAM CUP WITH IMPROVED HEAT RETENTION AND THE PROCESS FOR ITS MANUFACTURE

Donald W. Myers, and Samantha L. Vivlamore, both of Canandaigua, N.Y., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 942,836, Sep. 15, 1978, Pat. No. 4,239,727. This application Dec. 4, 1980, Ser. No. 212,920
Int. Cl.³ B29D *27/00*
U.S. Cl. 206—519 **17 Claims**



1. A thermoplastic foam container consisting essentially of oriented styrenic polymer having a deep drawn wall of polymer foam, said foam characterized by containing flat, elongated, pancake-shaped, interleaved, gas-containing cells, uniformly distributed generally parallel to the codirectional wall surfaces; said styrenic polymer having a Vicat softening point of at least 100° C.; said wall further characterized by having an average specific gravity of less than 0.15 prior to any thermally caused increase in wall thickness; and said container capable of undergoing an excess of 10% increase in wall thickness when subjected to a temperature between about 82° C. and about 100° C.

4,359,161

DISPLAY PACKAGE FOR A COMBINATION FISHING ROD AND REEL ASSEMBLY

Leonard Sinoff, 1307 Roosevelt Ave., Havertown, Pa. 19083

Continuation of Ser. No. 119,526, Feb. 7, 1980, abandoned. This application Oct. 26, 1981, Ser. No. 314,765
Int. Cl.³ A01K *97/08*
U.S. Cl. 206—315 R **6 Claims**

1. A display package for a combination fishing rod and reel assembly, comprising:

(a) a back support member;

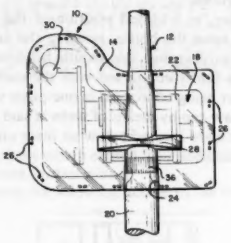
(b) a front member formed of transparent material and adapted to be secured to said back member to form a closed package;

(c) said back member having a U-shaped groove extending across the surface thereof to reinforce said back member and to receive therein a mid-portion of the rod to which the reel is mounted;

(d) a reinforcing rib formed in said back member transverse

to said U-shaped groove to restrain tearing of said back member, whereby unauthorized access to the reel through said back member, by tearing, is prevented by the combined reinforcing action of said U-shaped groove and said reinforcing rib;

(e) said front member defining a cavity substantially conforming to the reel and adapted to receive the reel therein; and



(f) said package when closed being adapted to surround and closely conform both to the reel and to said mid-portion of the rod; the opposite ends of said U-shaped groove cooperating with said front member, and when said package is closed, to define opposed openings in said package through which the rod extends to provide a pilfer-proof display package.

4,359,162

DEVICE FOR STACKING BOARD-STAPED ARTICLES

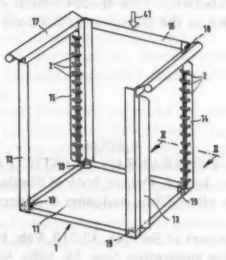
Karl Mayer, Radolfzell; Erich Luther, and Martin Maelzer, both of Hagenburger Strasse 26, Wunstorf, all of Fed. Rep. of Germany, assignors to Erich Luther and Martin Maelzer, both of Wunstorf, Fed. Rep. of Germany

Filed Sep. 4, 1980, Ser. No. 184,160

Claims priority, application Fed. Rep. of Germany, Sep. 18, 1979, 2937691

Int. Cl.³ A47G *19/08*; A47F *5/12*

U.S. Cl. 211—41 **11 Claims**



1. A device for stacking board-shaped articles including a frame having a stacking space into which the articles are insertable in a loading direction and including spacing elements disposed between adjacent articles in the frame, characterized in that the spacing elements are supported in an inoperative position extending into said stacking space and in the frame to be deflectable from said inoperative position by said articles during insertion thereof into said stacking space so as not to impede their loading except where an article already loaded is present directly beyond a respective spacer element in the loading direction.

4,359,163

BUSHING FOR THE HOLDING OF TOOLS, SPINDLES OR LIKE PARTS, PARTICULARLY FOR THE USE IN SUPPORTING UNITS IN COMBINATION WITH NUMERICAL CONTROL MACHINES

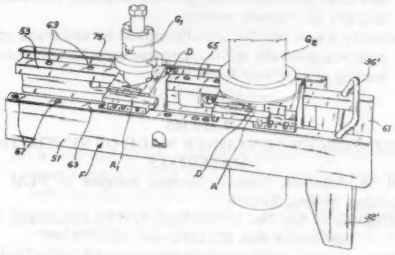
Mario Ratti, Milan, Italy, assignor to S.U.S.T.A. S.p.A., Milan, Italy

Filed Apr. 17, 1979, Ser. No. 30,875

Claims priority, application Italy, Apr. 17, 1978, 22380 A/78

Int. Cl.³ A47F *7/00*

U.S. Cl. 211—60 T **12 Claims**



1. A bushing for retaining and supporting at least one tool, spindle or the like, particularly for use with a support structure supporting a plurality of such tools to be used in a numerically controlled machine, said bushing comprising:

two component parts together forming a box-like parallelepiped configuration and defining therebetween an insertion seat for receiving a particular tool, spindle or the like;

said parts being adjustably movable toward and away from each other in opposite directions generally perpendicular to the axis of said insertion seat between a plurality of differently spaced positions, such that moving parts toward each other reduces the size of said insertion seat, and moving said parts away from each other increases the size of said insertion seat, to thereby adjust the size of said insertion seat as a function of the size of the particular tool, spindle or the like to be received therein; and

said parts each having retaining means for matingly engaging each other in each of said plurality of positions, and for thereby fixing the relative spacing between said parts and the size of said insertion seat at each of said plurality of positions.

4,359,164

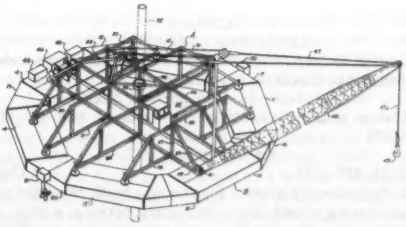
FLOATING CRANE APPARATUS

James T. Triplett, P.O. Box 488, Chester, S.C. 29706

Filed Sep. 4, 1979, Ser. No. 72,347

Int. Cl.³ B66C *23/52*

U.S. Cl. 212—182 **12 Claims**



1. Floating crane apparatus comprising:

an annular float assembly supporting said crane apparatus

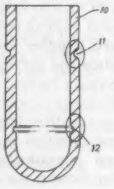
including pontoon means having a generally annular configuration which includes a medial opening;
frame means carried by said pontoon means in said annular configuration;
bridge means included in said frame means extending generally across said annular float assembly spanning said medial opening;
boom means operatively carried by said bridge means and said float assembly for movement in a generally vertical plane; and
propulsion means carried by said float assembly for rotating said float assembly thereby moving said hoist boom means laterally in a unitary manner;
whereby a load may be laterally moved by said crane apparatus in a generally self-leveling manner with reduced side loading of said hoist boom means.

4,359,165

REINFORCED CONTAINER MADE OF SYNTHETIC MATERIALS

Kjell M. Jakobsen, Skanör, Sweden, assignor to PLM Aktiebolag, Malmo, Sweden

Continuation of Ser. No. 18,190, Mar. 7, 1979, abandoned. This application Jun. 22, 1981, Ser. No. 275,700
Claims priority, application Sweden, Mar. 13, 1978, 7802815
Int. Cl.³ B65D *23/00*
U.S. Cl. 215—1 C **3 Claims**



1. A container of PET material formed from a blank in predominantly amorphous state by blowing the blank with biaxial stretching at a temperature in excess of the glass transition temperature, the container being provided with a wall having inner reinforcing ribs, the improvement wherein the material of the reinforcing ribs has at least greater density or a greater density of crystallization than that of the material of the container surrounding said reinforcing ribs, said reinforcing ribs being annular in extent and obtained at grooves initially formed in said wall at one side thereof and having higher crystallinity than the remainder of said wall to provide said ribs with a cross-section shaped as humped protuberances providing increasing thickness of the container in the wall thereof at said ribs at the side thereof in which the grooves are initially formed, said container having an outer continuous surface at said ribs which is unbroken.

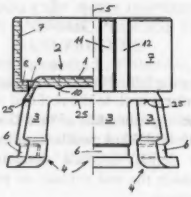
4,359,166

CONTAINER CLOSURE CAP

Werner F. Dubach, Maur, Switzerland, assignor to Createchnic Patent AG, Dietlikon, Switzerland

Filed Oct. 24, 1980, Ser. No. 200,202
Claims priority, application Switzerland, Nov. 7, 1979, 9961/79
Int. Cl.³ B65D *45/32*
U.S. Cl. 215—272 **8 Claims**

1. A closure cap adapted for closing a bottle or similar container having a neck and a dispensing opening, a neck end surface surrounding the dispensing opening and a mouth bead located below the neck end surface and a constricted portion at its underside, comprising:
a claw cap intended to lie above the dispensing opening of the bottle and adapted to cover such bottle dispensing opening at least at its outer region;
said claw cap having a roof wall;
said roof wall being provided with a number of arm members adapted to extend past the mouth bead;
said arm members being provided with claws which are adapted to lie in the constricted portion of the bottle;
a ring member supported by said claw cap and having engagement portions;
said ring member, in a closed position of the closure cap when seated upon the bottle, pressing the arm members and claws firmly against the mouth bead such that the closure cap is firmly connected with the mouth bead;
said ring member being connected in one-piece with the roof wall of the claw cap by means of webs at said engagement portions which are located below an inner circumference of said ring member;



said engagement portions, with the closure cap mounted upon the bottle neck, being adapted to firmly press the claws into said constricted portion at an underside of the mouth bead;
said ring member possesses the same number of engagement portions as the closure cap possesses arm members and claws;
said engagement portions, in the unmounted condition of the closure cap when it is still in one-piece and when viewed from above, being arranged on the same respective radius of a circle as the related arm member and claw; and
said arm members and claws of the claw cap and said engagement portions of the ring member are uniformly distributed over the circumference of the closure cap and form therebetween free spaces which have a length at least as long as the engagement portions are wide.

4,359,167

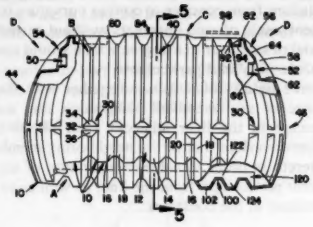
SUBTERRANEAN PLASTIC TANK

James L. Fouss; John J. Parker, both of Findlay, and Donald A. Lytle, Tiffin, all of Ohio, assignors to Hancor, Inc., Findlay, Ohio

Continuation-in-part of Ser. No. 12,019, Feb. 14, 1979, Pat. No. 4,254,885. This application Nov. 24, 1980, Ser. No. 209,746
Int. Cl.³ B65D *6/38*
U.S. Cl. 220—72 **25 Claims**

1. A thin walled plastic tank for subterranean storage and transmission of materials, said tank comprising:
a bottom wall having a peripheral edge disposed generally in a horizontally plane;
a peripheral wall connected to and extending generally upward from the peripheral edge to an apex area, the peripheral wall having a plurality of corrugations extending from the bottom wall toward the apex area, the corrugations comprising alternating crown and root portions, a plurality of rib portions disposed in the root portions of

the corrugations, each rib portion having an outer portion which is substantially flush with the crown portions and



side portions which extend from the outer portion into one of the root portions; and

access means for allowing access to the interior of the tank.

4,359,168

WOOD REINFORCED PLASTIC-SHEATHED MEMBERS, E.G. FOR BOXES

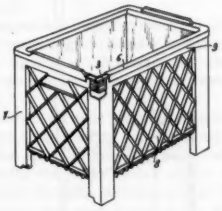
Alain Triadu, Levallois Perret, France, assignor to Allibert Exploitation, Societe Anonyme, Grenoble, France

Filed Jun. 27, 1980, Ser. No. 163,797

Claims priority, application France, Jun. 29, 1979, 79 17420

Int. Cl.³ B65D *6/00, 6/34*

U.S. Cl. 220—73 **5 Claims**



1. A reinforced synthetic resin object having at least one elongated member, said member comprising:

a molded synthetic-resin channel having a pair of walls extending therealong and opening at one side of said member, each of said walls having a row of spaced apart through-going openings and having a thin section provided with said openings and a thick section adjacent said thin section;

a reinforcement armature received in said channel and formed on opposite sides thereof with respective grooves of dovetail cross section, each registering with the openings of a row of a respective wall; and

a synthetic resin cap molded on said thin sections of said walls and the open side of said channel while filling the openings and penetrating into said grooves, said cap being flush with said thick sections.

4,359,169

CONTAINER END CLOSURE ARRANGEMENT

Charles R. Helms, Malvern, and Richard L. Bell, Exton, both of Pa., assignors to Container Corporation of America, Chicago, Ill.

Filed Aug. 28, 1981, Ser. No. 297,247

Int. Cl.³ B65D *51/22, 41/00*

U.S. Cl. 220—258 **8 Claims**

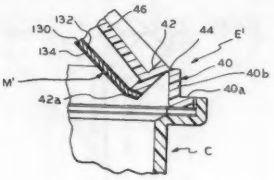
1. In a closure arrangement for a container having body and closure members with plastic rim portions, the combination of:

(a) a tubular container member including a rim presenting a relatively flat, annular, axially outward facing, sealing surface;

(b) a closure member including a rim presenting a relatively flat, annular, axially inward facing, sealing surface;

(c) a relatively flat sealing membrane secured between said members and comprising:

(i) a central panel formed of a relatively thin metallic foil;



(ii) a heat activatable coating of plastic material on the inner surface of said central panel bonding said membrane to said container rim surface;

(iii) a heat activatable coating of plastic material on the outer surface of said central panel bonding said membrane to said closure member rim surface.

4,359,170

CAN CLOSURE PROVIDED WITH OPENING TAB

Harry Edlund, Terserusvägen 26, S-161 52 Bromma, Sweden

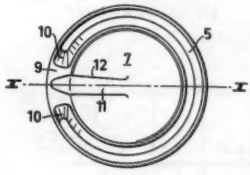
PCT No. PCT/SE80/00259, § 371 Date Jun. 16, 1981, § 102(e) Date Jun. 16, 1981, PCT Pub. No. WO81/01128, PCT Pub. Date Apr. 30, 1981

PCT Filed Oct. 24, 1980, Ser. No. 276,385

Claims priority, application Sweden, Oct. 26, 1979, 7908904

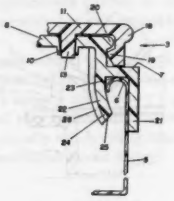
Int. Cl.³ B65D *17/32, 41/32*

U.S. Cl. 220—268 **6 Claims**



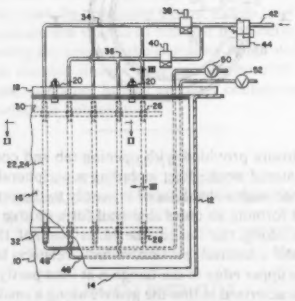
1. Can closure provided with opening tab and consisting of a plastic material or the like, including a peripheral fastening flange formed with a shank faced inwardly to the center of the closure and forming an outer side wall for a groove formed in the closure along the flange, the inner wall of the groove merging into a central portion, which relative to a plane through the upper edge of the flange is at least partly convexly shaped, characterized in that the groove along a smaller part of the peripheral flange is interrupted by a bent-up elevated portion, which is substantially flush with the upper edge of the flange and extends between said edge and the central portion, and that an opening tab extends from or near the flange along the elevated portion up to at least the transition to the central portion.

4,359,171
CONTAINER COVER LOCKING ASSEMBLY
Duane H. Lewis, Claysville, Pa., assignor to Continental Plastics, Inc., Triadelphia, W. Va.
Filed Jul. 28, 1981, Ser. No. 287,707
Int. Cl.³ B65D *39/00*
U.S. Cl. 220—307 **8 Claims**



1. A locking assembly for a container cover used with a container body of the type having a cover seat formed from the inwardly curved upper edges of the container body's side panels, comprising: a base member; a continuous peripheral skirt depending downwardly from said base member, a ridge depending downwardly from said base member, said ridge being spaced inwardly from and having a longitudinal axis parallel with said skirt and forming together with said skirt and the portion of said base member between said skirt and said ridge a mounting channel which engages said container mounting seat; several tapered locking lips depending from said ridge and curving outwardly toward yet terminating short of said skirt for urging said container cover down against said mounting channel; and at least one support rib attached to each of said several locking lips, said rib being transverse to the longitudinal axis of said ridge and on the face of each lip opposite said mounting channel such that said ribs stiffen said locking lips once said container cover is mounted onto said container body.

4,359,172
METHOD OF STIMULATING FLOW OF PARTICULATES
John J. Kane, Millcreek Township Erie County, Pa., assignor to The Pittsburgh & Conneaut Dock Company, Conneaut, Ohio
Filed Nov. 24, 1980, Ser. No. 209,597
Int. Cl.³ B65G *3/14*
U.S. Cl. 222—1 **7 Claims**



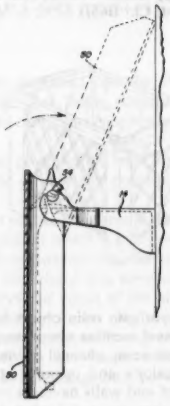
1. A method of stimulating flow of particulates toward an outlet of a container and separating any weakly adherent particulates from an interior wall surface of said container, said method comprising:

providing a flexible wear resistant liner loosely covering said surface and a plurality of inflatable members spaced along the surface juxtaposed said surface and the liner,

inflating and deflating said members so as to create alternate undulations from concave to convex curvature in the liner adjacent each of said members without stretching the material of said liner to a degree which would cause puncture thereof by said particulates,

the relative rigidity of said liner together with the spacing and size of said members being such that undulatory movement in the liner adjacent each of the inflatable members overlaps that of the neighboring members nearest thereto in order to achieve separation of any weakly adherent particulates from the liner as well as to dislodge particulates in the container.

4,359,173
TUBE HOLDER-DISPENSER
Shelley R. Williams, 500 Cheyenne Blvd. #166, Madison, Tenn. 37115
Filed Sep. 5, 1980, Ser. No. 184,297
Int. Cl.³ B65D *35/28, 35/56*
U.S. Cl. 222—100 **9 Claims**



1. A tube holder-dispenser for suspending a tube and discharging its contents comprising a horizontal base, supporting flanges at each side extending above the surface in the forward portion of the base, arcuate recesses in the upper surface of said flanges, a transverse slit in the forward portion of the base for compressing a tube, a reel for winding said tube and pulling it through the compression slit, said reel being seated in the aforesaid arcuate recesses parallel to and spaced above the compression slit, said reel having a slot extending substantially the length of the reel for anchoring the broad end of the tube, said slot being deeply cut diametrically into the reel from one peripheral surface short of the other, and a second shorter slot midlength of the reel and continuous with the first slot extending diametrically to the opposite peripheral surface for viewing the threading of the tube, a shield for protecting and concealing the tube being depended from said reel, said shield having a bowed forward portion and side end pieces notched near their top for pivoting on the reel from a downward depending position to an above the reel out of the way position when the tube is being compressed.

4,359,174

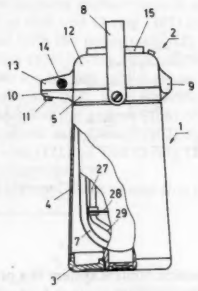
TABLE AIR POT FOR HOT AND COLD WATER

Fukuda Ikunosuke, 1-15, Midori, Isurumi-Ku, Osaka, Japan; Jen-Csung Pan, 8, Lane 24, Jen-Al-Rd., Sec. 2, and Shiang-Fu Wang, 516 Tun-Hua S. Rd., Suite 1, 6F, both of Taipei, Taiwan

Continuation-in-part of Ser. No. 78,937, Sep. 26, 1979, abandoned. This application Aug. 18, 1980, Ser. No. 179,007

Int. Cl.³ B67D *5/60*

U.S. Cl. 222—131 **4 Claims**



1. A table air pot comprising:

an elongate outer casing having a top end and a bottom end;

a lower supporting means mounted at said outer casing bottom end;

an upper supporting means mounted at said outer casing top end and including an annular member having a central opening, having a circumferential wall, and having a liquid outlet outwardly projected from said circumferential wall;

a vacuum-insulated wide mouth bottle housed in the outer casing and supported by said upper and lower supporting means, the upper supporting means central opening connected with the wide mouth of the bottle and having substantially the same size diameter as the diameter of said wide mouth, and said liquid outlet adapted to be connected into communication with the inside of the bottle;

a liquid tube having one end connected to the liquid outlet and other end extending into the bottle downward to the adjacency of the bottom of the bottle;

a lid pivotally connected onto the upper supporting means for the bottle in order to open and close the opening of the upper supporting means;

a bellow-type pump device fixed inside the lid; and

a plug fixed to the bottom of the pump device for closing the wide mouth bottle when the lid in its closed position.

4,359,175

ADJUSTABLE VIBRATING POWDER DISPENSING ASSEMBLY

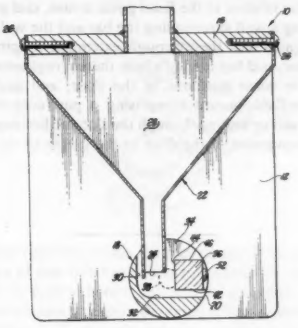
Kevin J. Lizenby, Traverse City, Mich., assignor to Kelsey-Hayes Company, Romulus, Mich.

Filed Nov. 14, 1980, Ser. No. 207,017

Int. Cl.³ A01C *3/06*

U.S. Cl. 222—199 **9 Claims**

1. A powder dispensing assembly (10) comprising; support structure (12, 14, 16), dispensing means (18) movably supported by said support structure (12, 14, 16) for receiving powder and having a lip (20) over which particles of powder move to define a falling curtain of powder particles, supply means (22) for establishing a flow path and supplying powder particles to said dispensing means (18), said dispensing means (18) defined by an elongated receptacle for receiving powder particles from said supply means (22), said receptacle (18) having a rear wall (30) and a bottom wall (32) extending from said rear wall (30) to said lip (20) and end walls (34) at opposite ends of said rear and bottom walls (30, 32), said assembly characterizdd by said receptacle (18) including flow control means (36) extending between said end walls (34) above said bottom wall (32) to establish a gap between said bottom wall (32) and said flow control means (36), drive means (38, 40) for vibrating said receptacle (18) rectilinearly and parallel to said



lip (20) so that said walls (30, 32, 34) and said flow control means (36) vibrate in unison to dispense particles through said gap and over said lip (20) and adjustment means for adjusting the angular position of said receptacle (18) relative to said support structure (12, 14, 16) and about its longitudinal axis extending between said end walls (34) thereof.

4,359,176

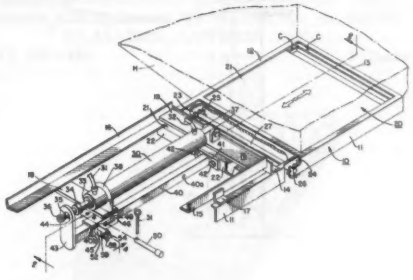
POWERED HOPPER DOOR

Grady L. Johnson, Rte. 1, Box 378, Luxora, Ark. 72358

Filed Sep. 19, 1980, Ser. No. 188,444

Int. Cl.³ B61D *7/20, 7/28*

U.S. Cl. 222—504 **9 Claims**



1. A power actuated closure assembly for controlling the discharge of materials from an opening in the bottom of a hopper, comprising:

(a) a frame having a door support portion extending around the opening in said hopper and having a door receiving channel extending longitudinally of the frame, and the frame having a power actuator support portion fixed to the door support portion and extending longitudinally therefrom;

(b) a door comprising a plate reciprocably slidable longitudinally in said channel from a closed position wherein said door closes said opening, through intermediate positions, to an open position wherein the door substantially underlies the actuator support portion of the frame;

(c) power actuator means mounted on said actuator support portion of the frame and including a member longitudi-

nally reciprocable toward and away from the door support portion of the frame; and including a longitudinal bar fixed to the door, guide means fixed to the frame and surrounding the bar, and means coupling the bar with said reciprocable member; and

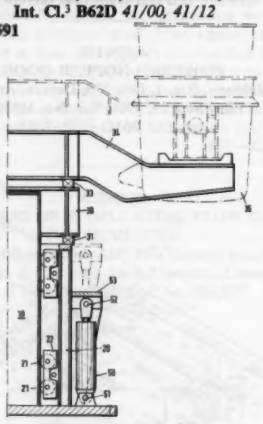
(d) manually controllable means operative between the bar and the guide means to arrest longitudinal reciprocation of the bar relative to the fixed guide means, said guide means having a wall surrounding the bar and the wall having an elongated slot therethrough extending longitudinally of the bar, said bar having a hole therein registering with the slot in some positions of the door; and said manually controllable means comprising a pin receivable in said hole and extending through the slot and limiting longitudinal movement of the door to the length of the slot.

4,359,177

REVOLVING TURRET FOR CONTINUOUS CASTING, WITH INDEPENDENT ARMS, AND ECCENTRIC LOAD COMPENSATION

Michele Noto La Diega, Genoa, Italy, assignor to Costruzioni Meccaniche Industriali Genovesi, Italy

Filed Jun. 26, 1980, Ser. No. 163,408
Int. Cl.³ B62D *41/00, 41/12*
U.S. Cl. 222—591 **2 Claims**



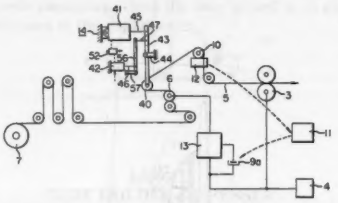
1. In a continuous casting apparatus having a vertically liftable turret, a pair of arms mounted on said turret for vertically lifting together with said turret and mounted for independent horizontal rotation on said turret, and means comprised of simple effect jacks for vertically lifting said turret, the combination comprising: a plurality of double effect hydraulic jacks each having a respective upper and lower chamber and disposed in diametrically opposed pairs around said turret and mounted for supporting said turret in a lifted condition; and means for interconnecting the lower chamber of each said double effect hydraulic jack to the upper chamber of the double effect hydraulic jack diametrically opposed thereto to define pairs of interconnected diametrically opposed jack pairs effective to compensate for eccentric loads applied to said turret.

4,359,178

WEB INFEED TENSION CONTROL SYSTEM WITH DANCER ROLL

Hiromi Hayashi, Tokyo; Shigeru Takahashi, Machida, and Kazuo Kawamura, Hachioji, all of Japan, assignors to Komori Printing Machinery Company, Ltd. and Nihon Regulator Co., Ltd., both of Tokyo, Japan

Filed Jun. 23, 1980, Ser. No. 161,780
Claims priority, application Japan, Jun. 3, 1978, 53-75153
Int. Cl.³ B65H *23/18*
U.S. Cl. 226—25 **7 Claims**



1. A web infeed tension control system in a printing press for feeding a web of material from a paper feed roll to a printing plate roll driven at a predetermined speed by a drive motor, said system comprising; a web infeed roll, a differential drive unit drivingly connected with said web infeed roll, said differential drive unit including a circular spline, a flexible spline, and a wave generator with an output shaft thereof coupled to said web infeed roll; wherein a rotation input is imparted from said drive motor to said flexible spline while a portion of said input is imparted to said wave generator in the direction opposite to rotation of said flexible spline, and the result of computing said two rotation inputs is obtained from said circular spline to produce an output; said system further including a clutch means changing state of coupling between said differential drive unit and said drive motor in accordance with the result of computation; dancer roll mechanism interposed between said web infeed roll and a pinch roll, said dancer roll mechanism including a dancer roll pressed against said web material with a constant pressure, an air cylinder, a solenoid valve, a control valve and a lever arm coupling said dancer roll, air cylinder, solenoid valve and control valve; wherein said dancer roll is so adjusted as to be in an equilibrium of force to the tension of said web material by said air cylinder via said lever arm, and said control valve applies, in response to changes in the preset tension, a control pressure to said air cylinder for enabling the dancer roll to continue the action at a fixed position; a web tension sensor means positioned between said pinch roll and the printing plate roll for sensing tension changes in said web material; and control means computing signals of said web tension sensor means in a phase advance circuit and controlling the rotation speed of said wave generator via said clutch means.

4,359,179

APPARATUS FOR DETECTING A MALFUNCTION IN THE PAPER FEED SYSTEM OF A PRINTER

John R. Waiss, Northfield, Ill., assignor to Teletype Corporation, Skokie, Ill.

Filed Oct. 28, 1980, Ser. No. 201,118
Int. Cl.³ B65H *25/00, 25/32, 17/38*
U.S. Cl. 226—25 **4 Claims**

1. An apparatus for detecting a malfunction in the paper web (12) feed system of a printer wherein the paper web (12) is transported along a predetermined path by a drive mechanism (16, 30) engaging the paper web (12) and thereby imparting a desired movement to the paper web (12) comprising:

a first cam (78) coupled to said drive mechanism (16, 30) and

providing an indication of the desired movement of the paper web (12);

a second cam (90) coupled to the paper web (12) and providing an indication of the actual movement of the paper web (12);

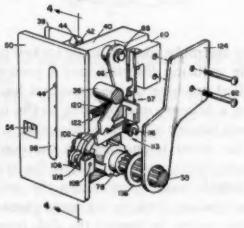
first means (114) responsive to said first and second cams (78, 90) for providing an indication in response to the relative positions of said first and second cams which indication is related to the actual movement as compared to the desired movement of the paper web (12);

said second cam (90) including a resilient O-ring (102) located about an outer surface thereof, said second cam (90) positioned so that said O-ring (102) is in frictional driven engagement with the paper web (12);

a pressure roller (104) having a circumferential groove (106);

means (54, 56) for biasing said pressure roller (104) against said second cam (90), said pressure roller (104) being positioned so that the groove (106) of said pressure roller (106) is adjacent said O-ring (102) thereby assuring that the paper web (12) and said O-ring (102) are in frictional driving engagement;

a follower (114) responsive to said first (78) and second (90) cams;



a switch (60);

a second means (66) responsive to the position of said follower for actuating said switch (60) in response to a predetermined relative position of said first and second cams (78, 90);

a pivotably supported switch actuating arm (66) positioned for selective actuation of said switch (60), said switch actuating arm being movable between a switch engaging position and a switch release position;

a switch actuating arm release lever (124);

third means (130) for urging said lever (124) into predetermined position relative to said follower (114) and said lever (124) having means (126) for selectively engaging said switch actuating arm; and

said release lever (124) having a first position engaging said actuating arm (66) determined by a first relative position of said cams (78, 90) for holding said actuating arm (66) in said switch engaging position and a second position determined by a second relative position of said cams (78, 90) for releasing said actuating arm (66) for movement to said switch release position.

4,359,180

CASSETTE TAPE RECORDER

Giovanni Santoro, Via Campodimele 55, Roma, Italy

Filed Mar. 27, 1980, Ser. No. 134,546

Claims priority, application Italy, Apr. 2, 1979, 48589 A/79

Int. Cl.³ B65H *17/22*

U.S. Cl. 226—188 **9 Claims**

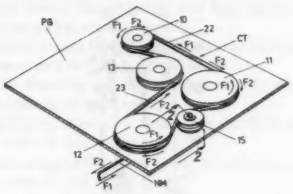
1. Improved tape transport system for a magnetic tape recorder comprising:

a bottom plate integrally formed with said magnetic tape recorder;

a first tape transport unit adapted to continuously exert a gripping action on said tape, said first transport unit comprising a first flywheel supported on said plate and having a peripheral race;

a second tape transport unit also adapted to continuously exert a gripping action on said tape, said second transport unit comprising a second flywheel also supported on said plate and having a peripheral race;

a drive pulley adapted to be driven by a motor member;



a drive belt received within the race of said drive pulley and the race of said flywheels so as to transmit the rotation of said drive pulley thereto, in the same direction, and,

a member adapted to exert a dragging action on the length of said drive belt comprised between said flywheels for tightening up the belt length moving from said member towards said drive pulley.

4,359,181

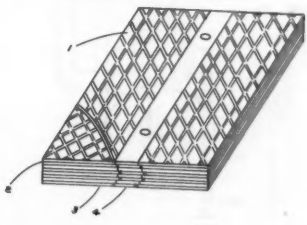
PROCESS FOR MAKING A HIGH HEAT TRANSFER SURFACE COMPOSED OF PERFORATED OR EXPANDED METAL

John Chisholm, 9337 SE. River Ter., Jupiter, Fla. 33458

Continuation-in-part of Ser. No. 909,497, May 25, 1978, abandoned. This application Apr. 25, 1980, Ser. No. 143,776

Int. Cl.³ B23K *31/00;* **B23P** *11/00*

U.S. Cl. 228—183 **3 Claims**



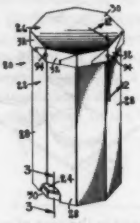
1. A method for making a unitary, fluid to fluid heat exchanger of laminated expanded metal whose two types of lamina are alternately stacked with their expanded metal areas above each other and oriented at 90° and staggered with respect to abutting lamina; said two types of lamina comprising a unique principle lamina having a solid metal central strip integral with other areas which have been converted to expanded metal and alternate lamina composed of three separate members including a central solid metal section and two separate expanded metal sections; said method comprising placing brazing material between flattened lamina, brazing the assembly by conventional methods, and removing flux from the brazed assembly.

4,359,182

CARTON WITH REMOVABLE TOP

David Perkins, Jr., Cedar Rapids, Iowa, assignor to Corrugated Drum Systems, Inc., Des Moines, Iowa

Filed Dec. 29, 1980, Ser. No. 220,466
Int. Cl.³ B65D *5/68*
U.S. Cl. 229—45 R **5 Claims**



1. A carton having a body and a cover removable therefrom, said body having a number of panels intersecting at vertice lines and having a plurality of locking tabs located at the tops of at least two of said vertice lines, said vertice lines extending through said locking tabs, said locking tabs being folded outwardly to extend towards the bottom of the body, said panels and said locking tabs being formed in an integral first blank,

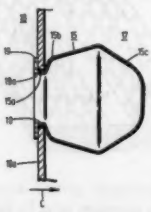
and said cover having a flat panel with a like number of sides intersecting at a like number of vertice lines and a plurality of cover tabs located at said vertice lines, said vertice lines extending through said cover tabs, said cover tabs being folded inwards to extend toward said panel, said flat panel and said cover tabs being formed in an integral second blank.

4,359,183

CARTON HANDLE

Kouichirou Aida, Tokyo; Haruo Suzuki; Mitsuru Kuwabara, both of Kanagawa, and Yukio Imaizumi, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Dec. 16, 1980, Ser. No. 217,156
Claims priority, application Japan, Dec. 29, 1979, 54/171749
Int. Cl.³ B65D *5/46, 25/28*
U.S. Cl. 229—52 A **7 Claims**



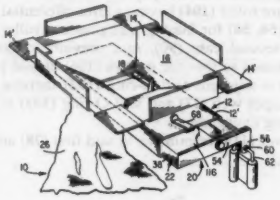
1. A handle for a carton formed with a handle receiving opening, said handle integrally formed from synthetic resin and comprising a relatively rigid flange portion larger than said opening in said carton and adapted to be received on a first side of said carton, said flange portion having a rigid transverse portion which extends through said opening into said carton and a bag portion integrally connected to said transverse portion of said flange about the periphery of said opening in said carton and being on the second side of said carton, said bag portion including a resilient expanded portion which has a larger dimension than said opening and a flexible bottom portion connected to said expanded portion on the second side of said carton and the thicknesses of said flange portion being thicker than said expanded portion and said bottom portion being thinner than said expanded portion.

4,359,184

SELF-LOCKING COIN RECEPTACLE AND COVER THEREFOR

August M. Sciortino, 1838 Weeg Way, Park Ridge, Ill. 60068

Filed Apr. 3, 1980, Ser. No. 136,889
Int. Cl.³ G07B *15/00*
U.S. Cl. 232—16 **16 Claims**



1. A cover assembly adapted to be locked onto a coin receptacle capable of being inserted into a preformed recess of a coin-controlled machine of the type that has an interior coin chute having a delivery end opening to the recess and including a top wall having a window alignable with said delivery end when the cover is engaged on the coin receptacle and together therewith is installed within the recess, slide means seated for slidable movement within the cover to cover and uncover the window, first spring means secured to the cover and to the slide means for biasing the slide means to a condition whereat the window is covered and second spring means arranged within said cover and operable upon said slide means to permit movement thereat upon one condition and prevent said movement upon a second condition; said second spring means comprising a generally flat spring having a first formation at one end thereof securable to said cover and a free opposite end arranged biased thereagainst, a catch formation on said free end, said catch formation being ridable upon said slide means during movement thereof, spring biased shutter blade means interposed between said catch formation and said slide means, said shutter blade means being mounted for movement with said slide means during uncovering of said window and for pivotal movement against its bias during return movement of said slide means, said blade means capable of being intercepted by said catch formation during return movement of said slide means to effect said pivotal movement whereby to bias said catch formation against said slide means, to prevent further movement thereat and detent means within said cover and operable with movement of said slide means, said detent means being disposed normally away from said window, said slide means operable to drive said detent means positively into said window when said slide means is manipulated against the bias of said first spring means partially or fully to uncover said window to prevent withdrawal of the covered coin-receptacle except when the window is fully covered.

4,359,185

MAILBOX

Geoffrey Castro, 1339 Crossfield, Katy, Tex. 77450

Filed Sep. 5, 1980, Ser. No. 184,291
Int. Cl.³ B65D *91/00*
U.S. Cl. 232—17 **1 Claim**

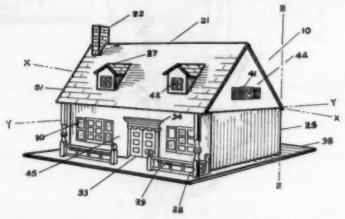
1. A mailbox, adaptable for use to contain packages of various sizes and to contain correspondance and the like, of personalized ornamental yet functional design patterned after colonial architecture or other architectural designs such as

French, modern, traditional, contemporary, and the like, comprising;

a compartment capable of containing correspondance and packages, said compartment being isolated from the ambient surroundings,

a roof hinged to expose said compartment to the delivery person or homeowner, said roof providing a positive seal against said ambient surroundings, said roof having decorative means such as the chimney, and two (2) dormers, and shingles,

a pouch with an opening, attached to the interior of said



roof, capable of supporting outgoing mail of larger than ordinary size,

a shell supporting said roof, said shell having two (2) side walls, a rear wall, and front wall, said front wall having decorative means such as the door, and two (2) windows, having translucent characteristics,

a door having a clip and magnetic holding means, said door being hinged to open and close, two (2) columns in which mail can be wedged between said front wall and said rails, and

a base to support said mailbox, said base being mountable to a mounting means.

4,359,186

MIXING VALVE ARRANGEMENT

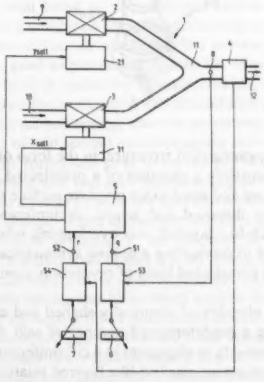
Harro Kiendl, Witten-Bommern, Fed. Rep. of Germany, assignor to Friedrich Grohe Armaturenfabrik GmbH & Co., Hemer, Fed. Rep. of Germany

Filed Jul. 28, 1981, Ser. No. 287,639

Claims priority, application Fed. Rep. of Germany, Aug. 14, 1980, 3030716

Int. Cl.³ G05D *11/00, 23/00*

U.S. Cl. 236—12 A **4 Claims**



1. A valve arrangement for the production of temperature controlled water at an outlet by mixing hot and cold water from hot and cold water supply lines, said arrangement comprising:

a first electromagnetically actuatable supply valve coupled between said hot water supply line and said outlet;

a second electromagnetically actuatable supply valve coupled between said cold water supply line and said outlet;

said first and second supply valves being independently actuatable;

first control means for actuating said first supply valve in response to a first control signal;

second control means for actuating said second supply valve in response to a second control signal;

temperature detecting means for measuring the temperature of mixed water of said outlet;

volume detecting means for measuring the flow volume of mixed water at said outlet;

temperature preselecting means for preselecting a desired temperature of said mixed water;

volume preselecting means for preselecting a desired flow volume of said mixed water;

first control loop means having inputs coupled to said temperature detecting means and said temperature preselecting means for generating a temperature control signal in response to said detected temperature and said preselected temperature;

second control loop means having inputs coupled to said volume preselecting means and said volume detecting means for generating a volume control signal in response to said preselected value and said measured flow volume; and

decoupling means for generating said first and second control signals in response to said temperature control signal and said volume control signal.

4,359,187

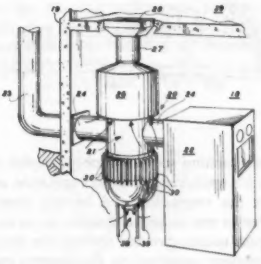
ENERGY RECOVERY SYSTEM

Richard F. Moore, 400 Booth Hill Rd., Trumbull, Conn. 06611

Filed May 12, 1980, Ser. No. 148,799

Int. Cl.³ F24B *7/00*

U.S. Cl. 237—55 **7 Claims**



1. An energy recovery system for installation in a furnace output flue line, comprising

A. a heat exchanging vessel adapted for mounting directly in the furnace output flue line and incorporating

a. an inlet portal for receiving output hot gas from the furnace,

b. a flue outlet portal for delivering said furnace air to a chimney flue, and

c. baffle means for controllingly diverting the furnace output hot gas through a pre-defined path;

B. first duct means positioned within the heat exchanging vessel and extending the entire length thereof, substantially along the central vertical axis of the heat exchanging vessel, and incorporating

a. an inlet portal located at the bottom of said first duct means for receiving ambient air,

b. a first outlet portal positioned at the top of said first duct means for delivering the warmed ambient air, and

c. a duct defining wall member cooperatively associated with the interior of the heat exchanging vessel to form therewith a heat transfer zone wherealong the ambient air rising through the duct means is continuously warmed; and

C. a shroud member peripherally surrounding the upper portion of the heat exchanging vessel and comprising

a. a shroud inlet portal formed at the base of said shroud for receiving ambient air, and

b. a second outlet portal spaced above said shroud and positioned for delivering the warmed ambient air to a pre-determined heating zone,

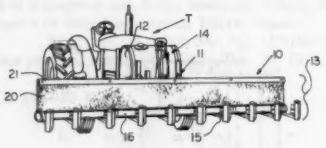
wherein the first outlet portal from said first duct means and the second outlet portal of said shroud merge within second duct means for carrying said warmed air directly to a zone wherein heated air is required, whereby the total aspiration of air is increased.

4,359,188

ASSEMBLY MEANS FOR FULL COVERAGE RECIRCULATING SPRAYER

John O. Moore, Helena, Ark., assignor to Sprayrite Manufacturing Co., West Helena, Ark.

Filed Oct. 15, 1980, Ser. No. 197,224
Int. Cl.³ B05B *1/28*
U.S. Cl. 239—121 **16 Claims**



1. In a recirculating spray assembly adapted for attachment to a vehicle for applying liquids to vegetation as the vehicle is driven over the vegetation and having support means, an upright collector mat mounted thereon, spray nozzles mounted on the support means directed toward the mat, an elongated open top reservoir mounted on the support means receiving the bottom end of the mat, a source of pressurized spray liquid carried by the vehicle connected to the nozzles, and means returning liquid from the reservoir to said source, the improvement comprising:

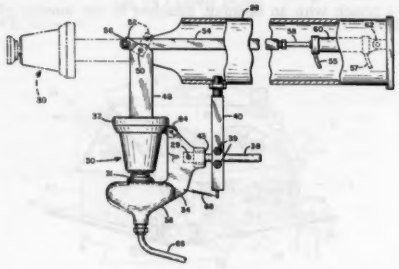
a screen device mounted in the open top of the reservoir between the mat and the interior of the reservoir effective to prevent entry of foreign particles into the reservoir and accommodating free hanging of the bottom end of the mat within the open top of the reservoir, said open top is of a width greater than said mat bottom end and said screen device loosely secures said mat bottom end in said open top, and said screen device is disposed between said mat and said spray nozzles, such that liquid drops falling from said mat may pass through said screen device into said reservoir.

4,359,189

AUTOMATIC ELECTROSTATIC CENTRIFUGAL ATOMIZER SYSTEM

Arthur T. Kroll, Oak Park, Ill., and Richard M. Sherman, Birmingham, Mich., assignors to Gralo Inc., Minneapolis, Minn.

Filed Mar. 23, 1981, Ser. No. 246,419
Int. Cl.³ B05B *1/28*
U.S. Cl. 239—121 **9 Claims**



1. An apparatus for operating a centrifugal paint atomizer in a paint application position and in a cleaning position, comprising

(a) an arm attached to said centrifugal atomizer, said arm having a pivotable attachment at its distal end;

(b) actuator means for moving said arm and said atomizer about said pivotable attachment; and

(c) a collector positioned below said pivotable attachment, and having an opening to receive said atomizer upon actuation of said actuator means.

4,359,190

EXACT INVOLUTE PLY PATTERNS

Nicholas J. Pagano, Centerville, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Aug. 18, 1981, Ser. No. 293,776
Int. Cl.³ B63H *11/00*; B29C *11/00*
U.S. Cl. 239—265.11 **12 Claims**

1. A hollow symmetrical structure, in the form of a body of revolution, comprising a plurality of a preselected number of identically shaped and sized exact involute surface plies which are successively disposed and joined circumferentially in a contacting, stack-like layered, and overlapping relationship.

11. A method of fabricating a hollow symmetrical structure in the form of a preselected body of revolution, comprising the steps of:

a. forming a plurality of identically shaped and sized plies;

b. positioning a predetermined number of said plurality of plies successively in alignment in a circumferential fashion and in a contacting, stacked-like layered relationship with each other, such that adjacent plies overlap each other by a predetermined distance; and

c. joining said positioned plies together.

4,359,191

DOUBLE-INJECTION TYPE FUEL INJECTION VALVE

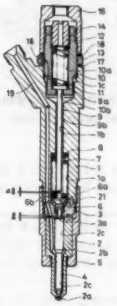
Kazuo Uchida, Higashi-Matsuyama, Japan, assignor to Diesel Kiki Co., Ltd., Matsuyama, Japan

Filed Feb. 25, 1981, Ser. No. 237,941

Claims priority, application Japan, Mar. 1, 1980, 55-26345[U]; May 23, 1980, 55-71940[U]; Jun. 27, 1980, 55-91018[U]

Int. Cl.³ F02M 45/08

U.S. Cl. 239—533.5 12 Claims



1. A fuel injection valve comprising: an injection nozzle having a nozzle hole portion and a nozzle needle arranged to be seated on said nozzle hole portion; a nozzle holder supporting said injection nozzle; a first spring arranged within said nozzle holder; a first movable spring seat coupled to said nozzle needle and supporting said first spring; means for adjusting the setting load of said first spring; a lift adjusting threaded member threadedly engaging said nozzle holder and rotatable relative thereto for displacement axially thereof, said threaded member being arranged to be operated for rotation from outside; a second spring supportedly engaging said lift adjusting threaded member; a second movable spring set engaging said lift adjusting threaded member and supporting said second spring, said second movable spring seat having one end disposed in a facing relation to said first movable spring seat and adapted to have said one end spaced from the first movable spring seat by a predetermined gap when said nozzle needle is in a seated position; said second spring and said second movable spring seat being so disposed that said first and second springs have a combined force thereof acting upon said nozzle needle when said nozzle needle is lifted beyond said predetermined gap; axial displacement of said lift adjusting threaded member, which is caused by rotation thereof, causing corresponding axial displacement of said second movable spring seat through said second spring, thereby permitting adjustment of the position of said second movable spring seat relative to said first movable spring seat so as to set the gap between said first movable spring seat and said second movable spring seat at a value within a range of between zero and a value equal to said predetermined gap when said nozzle needle is in a seated position; and means arranged to be operated from outside for adjusting the setting load of said second spring; whereby lifting of said nozzle needle from a seated position thereof causes said first movable spring seat to be lifted against the force of said first spring through a lift of said nozzle needle determined by said predetermined gap to effect an initial injection, and thereafter causes said first movable spring seat to urge said second movable spring seat against the combined force of said first and second springs to lift said second movable spring seat to effect a main injection.

4,359,192

TRIBOELECTRIC POWDER SPRAYING GUN

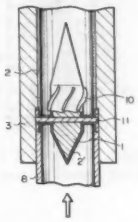
Akira Takahashi, Okazaki; Koyu Takase, Toyota; Hiroyoshi Kako, Aichi, and Nobuo Kobayashi, Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Japan

Continuation of Ser. No. 78,847, Sep. 25, 1979, abandoned. This application Feb. 12, 1981, Ser. No. 233,950

Claims priority, application Japan, Sep. 26, 1978, 53-131184

Int. Cl.³ B05D 1/04; B05C 5/04

U.S. Cl. 239—692 3 Claims



1. In a triboelectric powder spraying gun for spraying powdered paint comprising an earthed or high voltage-impressed conductive nozzle having a portion lined with a plastic material which possesses an electrification series different from that of said powdered paint, in which said powdered paint is transferred to said lined portion of said conductive nozzle where it is triboelectrically charged; the improvement comprising a turbulence generator which includes a combination of two or more guide blades positioned internally of said nozzle and upstream of said lined portion of said nozzle and operable to cause a swirl or vortex of said powdered paint as it enters the lined portion of said nozzle to assure a more complete and uniform triboelectrification of said powdered paint.

4,359,193

METHOD OF AND AN APPARATUS FOR FINELY DIVIDING INELASTIC MATERIALS

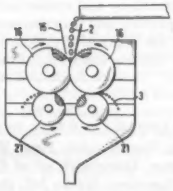
Klaus Schönert, Berlinerstr. 27a, D-75 Karlsruhe, Fed. Rep. of Germany

Continuation of Ser. No. 810,750, Jun. 28, 1977, abandoned. This application Jun. 11, 1980, Ser. No. 158,467

Claims priority, application Fed. Rep. of Germany, Jun. 30, 1976, 2629509

Int. Cl.³ B02C 4/08

U.S. Cl. 241—3 25 Claims



1. A method for fine grinding inelastic materials comprising:

(a) first urging an inelastic material to be ground, by compression loading into a plurality of adjacent recesses having a size selected in accordance with a degree of fineness desired so as to form subparticles at least some of which will be joined to each other by residual material due to the inelastic nature of the material;

(b) breaking any residual material connecting the subparticles formed, by movement of the subparticles, relative to each other; and

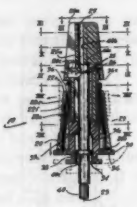
(c) removing said subparticles from said recesses.

4,359,194

TWO PIECE MANDRIL FOR QUICK MOUNTING AND RELEASE OF CONES, USED IN TEXTILE INDUSTRY

Amsey Buehler, Cobourg, and Robert P. Marquis, Bromont, both of Canada, assignors to Plastech Inc., Cowansville, Canada

Filed Mar. 24, 1980, Ser. No. 133,245
Int. Cl.³ B65H *54/54, 75/30*
U.S. Cl. 242—46.3 21 Claims



1. A mandril for mounting a cone used for winding thread or the like comprising in combination:

(a) a first cone-like member having a substantially conical outer surface arranged symmetrically about the longitudinal central axis of said member, an aperture in said member extending along at least part of said central axis and adapted to receive a shaft therein for use in mounting said mandril, said member also including means for positively securing said shaft thereto and for rotation therewith, said conical outer surface having abutment means thereon selectively extendable outwardly therefrom to thereby provide selectively, a protuberance on said conical outer surface;

(b) a second member, at least part of which is within said first member, said second member having a bore therein extending lengthwise and substantially centrally of the longitudinal axis of said second member, means on said second member continuously interlockingly engaging means on said first member to ensure positive locking and positive non-frictional driving engagement therebetween, said second member having means thereon for engagement by further means for selectively moving said second member inwardly or outwardly of said first member, said second member also having means thereon cooperatively engageable wih said abutment means and arranged such that, in a first position relative to said first member, said abutment means will not be extended by said means but in a second position relative to said first member, said abutment means will be extended by said means outwardly of said surface to thereby provide said protuberance on said conical outer surface for use in positively securing said cone upon said mandril for driving engagement therewith.

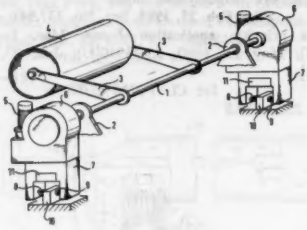
4,359,195

UNWINDING APPARATUS FOR ROLLS OF MATERIAL

Karl Thievessen, Grevenbroich; Peter Weiss, Neuss, and Herbert Schonmeier, Dusseldorf, all of Fed. Rep. of Germany, assignors to Jagenberg Werke AG, Dusseldorf, Fed. Rep. of Germany

Filed Sep. 24, 1980, Ser. No. 190,530
Claims priority, application Fed. Rep. of Germany, Sep. 24, 1979, 2938578
Int. Cl.³ B65H *17/02*
U.S. Cl. 242—68 7 Claims

1. In an unwinding apparatus for rolls of material of the type wherein the rolls are mounted with a pivot drive at each end of the roll with respect to a machine frame, the improvement comprising means for equalizing the torque of each pivot drive relative to the machine frame in each direction of rotation comprising for each pivot drive, a lever connected thereto, means resiliently mounting the lever to the machine frame, a contact member linked to the lever and four switches arranged in pairs symmetrically with respect to the contact member and



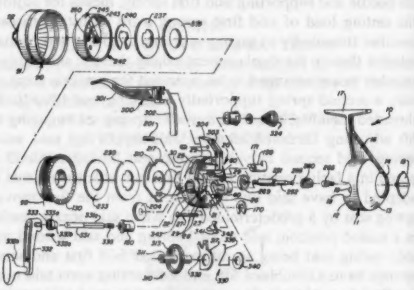
actuated thereby in response to movement of the lever resulting from torquing by the pivot drives.

4,359,196

SPINNING REEL HOUSING WITH AN ACCESS OPENING AND REMOVABLE CAP THEREFOR

John W. Puryear, Tulsa, Okla., assignor to Brunswick Corporation, Skokie, Ill.

Filed Dec. 22, 1980, Ser. No. 218,927
Int. Cl.³ A01K *89/01*
U.S. Cl. 242—84.2 R 9 Claims



1. In a closed face spinning reel having a body, a reel mechanism supported by said body, a front cover and a back housing connected with said body and forming an enclosure for said mechanism, and a rear wall on the back housing, the improvement comprising:

an opening centrally located in the rear wall affording access to the reel mechanism;

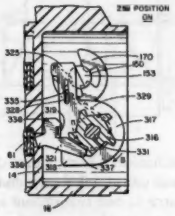
a removable cap for the opening, the opening has an inwardly directed radial flange on which the cap is seated, with cap locking surfaces on the inner face of the flange, and the cap has an inner surface with locking lugs for engagement with the cap locking surfaces, the locking lugs are outwardly directed flexible elements, spaced inwardly from the inner surface of the cap and the cap locking surfaces include a boss and recess peripherally spaced, one boss and recess for each of the lugs, rotation of the cap moving the lugs over a boss into and out of the associated recess.

4,359,197

SILENT-SELECTIVE ANTI-REVERSE MECHANISM

Henry L. Neufeld, Tulsa, Okla., assignor to Brunswick Corporation, Skokie, Ill.

Filed Jan. 17, 1980, Ser. No. 112,958
Int. Cl.³ A01K 89/02
U.S. Cl. 242—84.5 A 23 Claims



1. In a spinning reel, a device for selectively permitting or preventing the reverse rotation of the crank handle, comprising:

(a) a housing having a deck plate and body portions with exterior and interior surfaces, a first portion projecting forward of the deck plate and a second portion projecting rearward;

(b) bearing means in the second portion and extending from the interior surface through the exterior surface;

(c) a crank gear assembly mounted in the bearing means, the assembly comprising:

(i) a crank shaft,

(ii) a face gear mounted on the shaft having a back side,

(iii) ratchet means mounted on the shaft adjacent the gear,

(iv) anti-reverse drag means having a tab projecting parallel to the deck plate and being mounted on the shaft;

(d) pawl means mounted in the deck plate and directed toward the crank gear assembly and being engageable with the ratchet means, the tab engageable with the pawl means;

(e) a spring for urging the drag means to rotate in a first direction when the crank shaft rotates in a first direction and urging the drag means to rotate in a second direction when the crank shaft rotates in a second direction; and

(f) said second direction of rotation of the shaft being prevented when the drag means starts to rotate in the second direction by causing the tab to move the pawl means to engage the ratchet means.

4,359,198

WARP CREEL FOR BEAM WRAPPING MACHINE

Albert Brandenberger, Oberuzwil, Switzerland, assignor to Maschinenfabrik Benninger AG, Uzwil, Switzerland

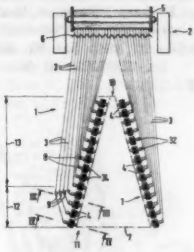
Filed Mar. 16, 1981, Ser. No. 244,334
Claims priority, application Switzerland, Aug. 4, 1980, 5890/80
Int. Cl.³ B65H 49/02; D03J 5/08
U.S. Cl. 242—131.1 18 Claims

1. In a warp creel for a beam warping machine, wherein at least a part of the threads payed-off of supply bobbins arranged in the lengthwise extent of the creel to both sides thereof and in a number of levels are each infed by means of a respective thread monitoring device by thread guide means to an outlet side of the creel, the improvement which comprises:

said thread guide means at each creel side comprising a plurality of rods;

said rods extending substantially vertically over all levels of the creel and imparting a deflection to the threads of at least one vertical bobbin row; and

means for displaceably supporting the individual rods so as to be moveable between a preparatory position, in which the individual rods are arranged forwardly of said thread monitoring devices of the related bobbin row, and an operative position in which the rods, at the creel outlet



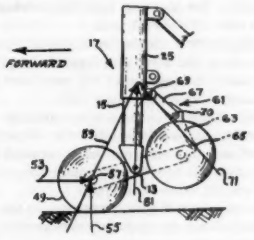
side, are clustered together to depend away from the related creel side and separating the threads.

4,359,199

SOFT LANDING GEAR

Louis T. Kramer; Franklin H. Butler, both of Long Beach, and Anthony V. Camino, Rancho Palos Verdes, all of Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Dec. 5, 1979, Ser. No. 100,321
Int. Cl.³ B64C 25/40
U.S. Cl. 244—100 R 2 Claims

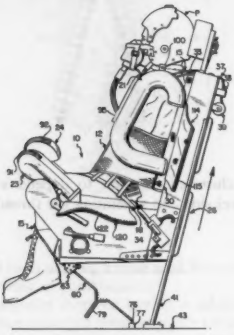


1. A bogie type front wheel touch down landing gear for use on an aircraft to provide soft landing capability, said landing gear comprising a vertical shock strut extending downward from the aircraft, said shock strut having a fixed portion and a piston slidable therein and extending downward from said strut, a substantially horizontal elongated bogie pivotally attached near its longitudinal center to the lower end of said piston, an axle and wheel positioned at the forward and aft ends of said bogie and an aft mounted linkage means in the form of a pair of pivotally connected links for controlling the landing forces, one of the ends of said aft mounted linkage means being pivotally secured to said aft end of said bogie and the other end of said aft mounted linkage means being pivotally secured directly to the lower end of said fixed portion of said shock strut, said aft mounted linkage means being sized to cause the forward end of said bogie to pitch downward so that the forward wheel contacts the ground first to produce a force therethrough and a tension force in said aft mounted linkage means, the resultant force therebetween being an upward piston force acting straight up the strut with little bending and friction on the piston.

4,359,200
LIMB RETENTION SYSTEM FOR AIRCRAFT EJECTION SEAT

Ronald E. Brevard, Fletcher; Gary F. Bradley, Hendersonville, both of N.C., and F. Terry Thomasson, Seattle, Wash., assignors to Stencel Aero Engineering Corporation, Arden, N.C.

Filed Oct. 31, 1980, Ser. No. 202,496
Int. Cl.³ B64D 25/06
U.S. Cl. 244—122 AG 11 Claims



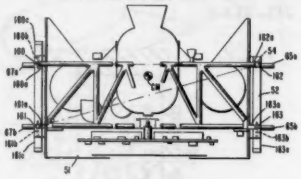
1. A pilot limb retention system for an aircraft ejection seat, the combination comprising:
two main straps having fore and aft ends;
first means for securing said aft ends of said main straps to the seat;
second means for securing said fore ends of said main straps to the seat;
two nets, each secured between one of said main straps and the seat;
stowage means for stowing said main straps and nets on opposite sides of the seat; and
inflatable deployment means for deploying said main straps and nets about the arms and legs of the pilot in the seat upon initiation of ejection of the seat from the aircraft,
said seat comprising a pan and a back,
said inflatable deployment means comprising
two aft inflatable bladders coupled to the seat adjacent the sides of said seat back and each coupled to one of said main straps for moving said main straps inward of the seat over the arms of the pilot,
two fore inflatable bladders coupled to the seat adjacent the sides of said seat pan and each coupled to one of said main straps for moving said main straps inward of the seat over the legs of the pilot, and
mean for tightening said main straps and nets over the arms and legs of the pilot to thereby restrain the limbs of the pilot as the seat moves out of the aircraft.

4,359,201
PAYLOAD DEPLOYMENT FROM SHUTTLE WITH LINEAR AND ANGULAR VELOCITY

Graham S. Thomson, Pacific Palisades, and Alois Wittmann, Rancho Palos Verdes, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Feb. 28, 1980, Ser. No. 125,807
Int. Cl.³ B64G 1/64
U.S. Cl. 244—158 R 8 Claims

1. Apparatus for the gyroscopic ejection of a spacecraft from a support structure comprising:
a spacecraft supporting cradle forming part of said support structure and having an open end;
a spacecraft having at least one attachment member on one side thereof and at least two attachment members on the opposite side thereof in longitudinally spaced positions, said spacecraft straddling said open end and said attachment members releasably engaging said cradle and supporting said spacecraft in said open end of said cradle;
said attachment members defining the corners of a triangle which encloses the center of mass of said spacecraft; and

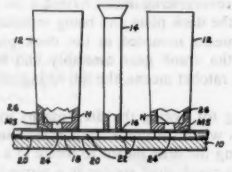


an ejecting mechanism having a part disposed between said cradle and said one attachment member to apply a tangential thrust force to one side of said spacecraft at the location of said one attachment member.

4,359,202
APPARATUS FOR BOTTOM CASTING METAL INGOTS

Charles C. Gerding; Joseph M. Stoll, both of Pittsburgh, and Harold L. Majors, Aliquippa, all of Pa., assignors to Jones & Laughlin Steel Corporation, Pittsburgh, Pa.

Filed Feb. 11, 1980, Ser. No. 120,427
Int. Cl.³ B22D 7/06, 41/08
U.S. Cl. 249—109 9 Claims

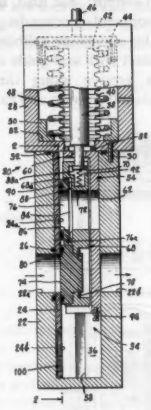


1. In bottom pouring apparatus wherein a plurality of upstanding ingot molds are simultaneously charged with molten steel in the absence of separate fluid pressure means through discharge ports of runners leading to the molds, the improvement wherein the molten steel flowing into each of said molds flows through a respective refractory nozzle leading from a discharge port of the runner over which the nozzle is mounted and wherein said nozzle includes:
(a) a fluid passage therethrough;
(b) means defining a first cavity having a bottom side forming an inlet port for said passage, said inlet port having a lateral cross-section larger than the discharge port of said runner;
(c) means defining a second cavity having an inlet side of less cross-sectional lateral area than and communicating with said first cavity whereby a constriction smaller than the discharge port of said runner is formed in said passage; and
(d) means defining a third cavity communicating with said second cavity, expanding within said nozzle the lateral cross-section of the passage from said second cavity and forming a top side outlet for said passage into the mold; and
wherein:
said nozzle is positioned in the bottom wall of the mold.

4,359,203
VALVE ASSEMBLY

Nakwon Cho, Knoxville, Tenn., assignor to Electro Nucleonics, Inc., Fairfield, N.J.

Continuation of Ser. No. 452,739, Feb. 8, 1974, abandoned. This application Jun. 15, 1976, Ser. No. 696,193
Int. Cl.³ F16K 31/44
U.S. Cl. 251—77 3 Claims

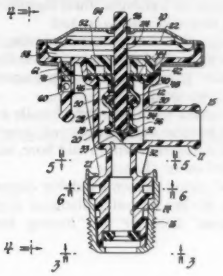


1. A valve structure comprising a valve member movable into and out of contact with first and second valve seating areas, first closure means for urging said valve member into engagement with said first valve seating area with a first force, and second closure means for urging said valve member into engagement with said second valve seating area with a second force less than said first force, said valve member comprises first and second block members coupled together so that a change in the relative positions therebetween along a longitudinal direction produces a change in the relative positions therebetween in a transverse direction, a stem member coupled to said first block member for moving it to first and second positions in which said second block member is positioned respectively adjacent said first and second valve seating areas, said stem member urging said first and second block members apart in a first longitudinal sense with a predetermined force when said first block member is in said first position and urging said first and second block members apart in an opposite longitudinal sense with another force less than said predetermined force when said first block member is in said second position thereby to urge said second block member against said first and second valve seating areas with said first and second different forces, said first and second valve seating areas respectively comprise a valve port and a first wall portion of said valve structure, said second block member includes a first part thereof for blocking fluid flow, said first part having sealing means thereon, said sealing means sealingly engaging said valve port when said first block member is in said first position to block fluid flow in said valve port, said sealing means sealingly engaging said first wall portion of said valve structure when said first block member is in said second position, said second block member includes a second part thereof having a fluid passage therethrough, sealing means on said second part, the sealing means on said second part sealingly engaging a second wall portion of said valve structure when said first block member is in said first position, the sealing means on said second part sealingly engaging said valve port when said first block member is in said second position to provide fluid communication between said valve port and the fluid passage through said second part, and said second part is spring-biased to provide the same sealing pressure between the sealing means thereon and said second wall portion of said valve structure and said valve port.

4,359,204
ROD OPERATED VALVE

Donald L. Williams, Port Clinton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 6, 1980, Ser. No. 204,634
Int. Cl.³ F16K 7/02, 41/10
U.S. Cl. 251—331 3 Claims



1. In a rod operated valve assembly adapted for installation in a fluid flow line, a unitized valve-spring-seal member of elastomeric material having a tubular portion received over the rod, said tubular portion being closed at only one end opposite an operating end of the rod and having a valve head with a valve face externally formed thereon adapted to control the fluid flow, said tubular portion having an outwardly projecting annular seal flange formed integral therewith and extending thereabout at a location remote from said valve head, said seal flange being adapted to be sealingly fixed thereabout in the valve assembly to thereby completely seal off fluid communication from the line with the rod and its actuator, said tubular portion including a single outwardly projecting corrugation extending about the rod and located intermediate said closed end and said seal flange to thereby provide said tubular portion with an elastic spring section and a compliance that will normally yieldingly hold said valve head in an open position and accommodate movement of said valve head to a closed position, and a single annular member of rigid material located in said corrugation and directly slidably mounted on said rod for preventing said tubular portion from collapsing and grabbing said rod as the result of external fluid pressure acting thereon.

4,359,205
HYDRAULICALLY OPERATED LIFTING APPARATUS AND PUMP THEREFOR

Micha Amster, and Gideon Shadmi, both of Kibbutz Mizra, Israel, assignors to Taamal Mizra, Kibbutz Mizra, Israel

Filed Jul. 18, 1980, Ser. No. 170,086
Int. Cl.³ B60P 1/48
U.S. Cl. 254—8 B 8 Claims

1. Portable hydraulically operated lifting apparatus comprising:

a wheel mounted chassis;

a mounting base supported on said chassis and defining first and second pivot mounting locations and a cylinder pivot mounting location;

said cylinder pivot mounting location being below the first and second pivot mounting locations;

a raisable element defining a planar supporting surface;

first and second support elements pivotably coupled to said first and second pivot mounting locations respectively and to said raisable element;

a hydraulically operated cylinder pivotably coupled to said

cylinder pivot mounting location and to said raisable element; and

means for supplying a pressurized flow of hydraulic fluid to said cylinder for providing extension thereof and consequent lifting of said raisable element, said supplying means comprising

a hydraulic pump including;

a reservoir for hydraulic fluid;

a cylinder bore communicating with said reservoir via a supply opening and having a first inner diameter;

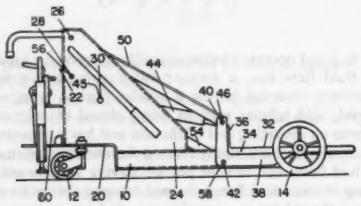
first one way valve means disposed at said supply opening for permitting entry of hydraulic fluid into said bore and preventing exist of hydraulic fluid therefrom at said supply opening into said reservoir; and

second one way valve means communicating with said cylinder bore at an outlet location located at the opposite end of said cylinder bore from said supply opening;

piston means comprising

a piston rod coupled to an operating handle and defining an intermediate portion having a second outer diameter and an end portion disposed within said bore, said end portion having a third outer diameter;

first and second piston elements slidably disposed about said end portion, having an outer diameter slightly less than said first inner diameter and having inner diameters



slightly greater than said third outer diameter and defining a hydraulic fluid passageway between said end portion and the inner diameters of said first and second piston elements;

a cap element mounted onto said end portion adjacent said second piston element; and

an annular seal associated with said cap element and being operative during outward motion of said piston rod with respect to said bore away from said supply opening when said cap element and said second piston element are forced together by the hydraulic fluid pressure between said cap element and said outlet location, to seal said hyraulic fluid passageway from the portion of said bore lying between said cap element and said supply opening, and thereby to force hydraulic fluid from said cylinder bore via said second one way valve means,

said annular seal being operative during inward motion of said piston rod with respect to said bore towards said supply opening, when said cap element and said second piston element are not forced together to permit hydraulic fluid communication from said cylinder bore via said hydraulic fluid passageway thereby forcing hydraulic fluid from said cylinder bore via said second one way valve means as said piston rod displaces hydraulic fluid in said cylinder bore.

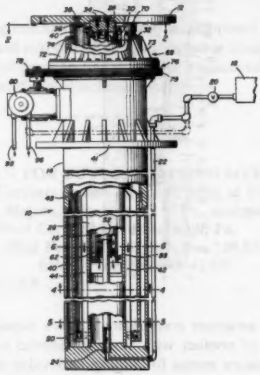
4,359,206

SEVERE DUTY HYDRAULIC CYLINDER WITH CONTINUOUSLY EFFECTIVE LOCKING DEVICE

Robert B. McCreery, 542 N. Galloway St., Xenia, Ohio 45385

Filed Sep. 19, 1980, Ser. No. 188,231
Int. Cl.³ B66F *3/24*
U.S. Cl. 254—93 R **13 Claims**

1. A hydraulic cylinder comprising a hydraulically operated ram for lifting an attached load and a safety locking means secured to said cylinder, said safety locking means capable of supporting said load at all positions during the lifting and return stroke of said ram, said hydraulically operated ram being secured to a load support means, said load support means being capable of supporting a load thereto, said hydraulical cylinder further includes a guide cylinder placed around and enclosing said ram, said guide cylinder being secured to said load support means, said ram and said guide cylinder capable of moving in unison to support said load, said ram being protected from the environment surrounding said cylinder by being totally enclosed by said guide cylinder, said safety locking means being in contact with said guide cylinder, said guide cylinder containing a groove along the exterior surface thereof, said groove extending along said exterior surface for a



predetermined length over said surface, said safety locking means including a thread to match said groove, said thread being in contact with said groove substantially at all times during the movement of said guide cylinder, said safety locking means comprising a threaded nut rotatable about the exterior surface of said guide cylinder wherein rotation of said safety locking means enables the movement of said guide cylinder, said groove being a single helical groove and said thread being a matching helical thread, said safety locking means being affixed at a permanent position on said hydraulic cylinder, said guide cylinder and said ram being movable relative to said safety locking means, and an exterior outer casing surrounding said guide cylinder, said safety locking means being attached for rotation to a rotating bearing assembly attached to said exterior casing.

4,359,207

EMERGENCY STOP MECHANISM FOR THE PAYLOAD OF A LIFTING MECHANISM

Michael C. Maryonovich, White Fish Bay, and Edward Ebey, Nashota, both of Wis., assignors to Fulton Manufacturing Corporation, Milwaukee, Wis.

Filed Oct. 28, 1980, Ser. No. 201,507
Int. Cl.³ B66D *1/54, 5/32*
U.S. Cl. 254—272 **21 Claims**

1. An emergency stop mechanism for a lifting device capable of moving a load against and with the force of gravity and having a primary cable, said cable exerting a force on said load opposing the force of gravity through tension in said cable and maintaining the position of said load or moving said load by variation of the tension force applied to said cable, said stop mechanism comprising:

a secondary cable having a first end and a second end, said first end of said secondary cable being fastened to said load;

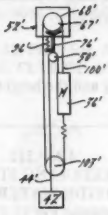
a rotatable idling drum, a portion of said secondary cable being wound around said drum;

tensioning means providing tension to said secondary cable to retard slippage between said drum and said cable;

braking means selectively engageable with said drum to retard rotation of said drum;

a first biasing means biasing said braking means away from engagement with said drum;

a second selectively engageable biasing means biasing said braking means towards engagement with said drum, said second biasing means exerting more force on said braking means than said first biasing means exerts on said braking



means when said second biasing means is selectively engaged; and

brake actuating means sensing magnitude of tension in said primary cable and selectively actuating said second biasing means in response to a predetermined decrease in tension along said primary cable;

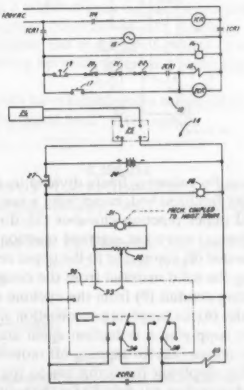
whereby, in response to said predetermined decrease in tension along said primary cable, said brake actuating means actuates said braking means into engagement with said drum to retard the rotation of said drum and thereby retard the motion of said secondary cable so as to cause said secondary cable to exert a force on said load against the force of gravity.

4,359,208

EMERGENCY BRAKE CONTROL FOR HOISTS

Alvin Kelm, Brookfield, and Edward S. Freiwald, Pewaukee, both of Wis., assignors to Rexnord Inc., Milwaukee, Wis.

Filed May 30, 1980, Ser. No. 154,846
Int. Cl.³ B66D *1/48*
U.S. Cl. 254—362 **10 Claims**



6. A control system for a hoist having a conveyance, a brake for stopping said conveyance, and a drive means for selectively moving said conveyance upwardly and downwardly, said control system being operative to control the operation of said brake and said drive means in response to the direction of motion of said conveyance and the existence of an emergency situation, comprising:

first means for indicating the direction of motion of said conveyance;

second means for indicating the presence of an emergency situation;

control means for immediately actuating said braking means responsive to the first means when it indicates descent of conveyance, and responsive to the second means when it simultaneously indicates the presence of an emergency situation;

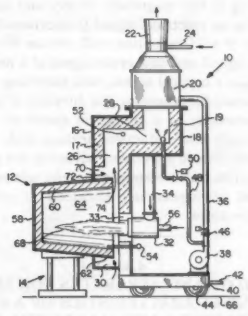
said control means additionally deenergizing said conveyance drive means and permitting said conveyance to coast to a stop, and thereupon actuating said braking means responsive to said first means when it indicates ascent of said conveyance, and when said second means simultaneously indicates an emergency condition.

4,359,209

HOT AIR LADLE PREHEAT STATION AND METHOD

James E. Johns, Upper St. Clair Township, Allegheny County, Pa., assignor to Bloom Engineering Co., Inc., Pittsburgh, Pa.

Filed Jan. 6, 1982, Ser. No. 337,446
Int. Cl.³ F27B *14/14*
U.S. Cl. 266—44 **13 Claims**



1. A hot air ladle preheat station comprising:

A. an outer casing defining an opening for receiving a separately supported ladle, said opening dimensioned so as to form a dilution air space about the ladle;

B. a wall spaced inward of the outer casing and defining a space therebetween, said space having a first lower section for accommodating the ladle in spaced apart relationship with said wall and an upper flue section;

C. stack means for exiting flue gas from said upper flue section;

D. burner means associated with said wall and lower section for directing a flame into said ladle; and

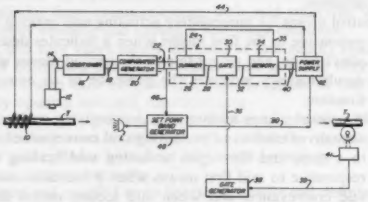
E. recuperator means cooperating with said upper flue section;

whereby products of combustion exit the ladle and pass upward mixing with and being cooled by dilution air drawn through said dilution air space and passing through the recuperator in heat exchange relationship for heating combustion sustaining gas directed to said burner means.

4,359,210
TEMPERATURE CONTROL APPARATUS

Curtis P. Peterson, Rochester, Wis., assignor to Crucible Inc., Pittsburgh, Pa.

Filed Jan. 21, 1981, Ser. No. 226,989
Int. Cl.[3] H05B 5/04
U.S. Cl. 266—87 3 Claims



1. Apparatus for controlling the temperature of an elongated metal workpiece, such as pipe or tubing, that is moving through a furnace chamber by regulating the power level of an induction heating coil used for heating said product within said furnace chamber, said apparatus comprising means for moving said workpiece through an induction heating coil where it is heated to an elevated temperature, a pyrometer at a location relative to said workpiece to produce an electrical signal proportional to the temperature of said workpiece after heating by said induction coil, means for comparing a set point signal proportional to the desired temperature of said workpiece at the location of said pyrometer with said electrical signal from said pyrometer to produce an error signal having a polarity corresponding to the direction of any deviation of said pyrometer electrical signal from said set point signal and a magnitude corresponding to the magnitude of any said deviation, means for producing an electrical signal proportional to the existing power level of said induction coil, means for summing said power level signal and said error signal at a preselected interval to produce a control signal, said summing means includes additional means for changing the duration of said preselected interval in response to a change in speed of said workpiece moving through said induction heating coil, and means for receiving said control signal and adjusting the power supplied to said induction coil in response thereto, whereby the temperature of said workpiece is maintained at substantially said desired temperature.

4,359,211
METHOD OF AND APPARATUS FOR MEASURING LEVEL AND CHARACTERISTICS OF A SLAG LAYER OVERLYING A METALLURGICAL METAL

Jean Baumert, Esch/Alzette, Luxembourg, assignor to Arbed S.A., Luxembourg

Filed Jul. 15, 1980, Ser. No. 169,481
Claims priority, application Luxembourg, Jul. 16, 1979, 81512
Int. Cl.[3] G01F 23/18; C21B 7/24
U.S. Cl. 266—99 11 Claims

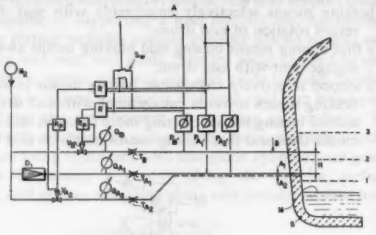
1. A method of measuring the level of slag in a top-blown melt-containing metallurgical vessel and a physical parameter of the slag, comprising the steps of:

(a) feeding jets of a gas laterally into said vessel through a lateral wall thereof at two locations spaced above a metallurgical charge in said vessel and disposed one above the other on said wall;

(b) initially establishing flows through said jets to provide equal back pressure therefor;

(c) detecting the back pressures of said jets while maintaining said flows to monitor the hydrostatic head of slag in said vessel at it rises above the lower jet; and

(d) determining the position of the slag level and said parameter by monitoring deviations of the detected back pressures from the original back pressures from the fact that the back pressures are proportional to the product of the

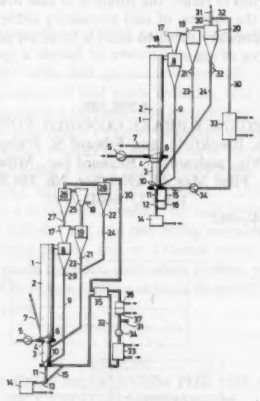


density of the slag and the height thereof above the lower jet.

4,359,212
APPARATUS FOR REDUCING FINELY DIVIDED IRON OXIDE MATERIAL

Erik A. Bengtsson, Borlänge; Per H. Collin, Stocksund; Sune N. Flink, and Björn Widell, both of Västeras, all of Sweden, assignors to Stora Kopparbergs Bergslags AB, Falun, Sweden

PCT No. PCT/SE80/00153, § 371 Date Jan. 29, 1981, § 102(e) Date Jan. 6, 1981, PCT Pub. No. W080/02652, PCT Pub. Date Dec. 11, 1980
PCT Filed May 28, 1980, Ser. No. 229,593
Claims priority, application Sweden, May 29, 1979, 7904689-2
Int. Cl.[3] C21B 13/06; C22B 1/10; B01J 8/28
U.S. Cl. 266—172 5 Claims



1. Apparatus for reducing finely divided iron oxide material in a circulating fluidized bed, comprising a reactor (1) containing a vertical upper reaction chamber (2), downwardly connected to a lower, narrower, vertical reaction chamber (3), a cyclone separator (8) connected to the upper reaction chamber for separating the solid material from the circulating fluidized bed, a recycling conduit (9) from the cyclone separator to the reactor, nozzles (6) for supplying combustion air to the reactor, means (7) for supplying a reduction agent and an iron oxide material (18), means (11) for tapping off reduced material, and means (10) for supplying fluidizing gas to the lower reaction chamber, said recycling conduit (9) for the solid material opening into the bottom of the lower reaction chamber, said nozzles (6) for combustion air extending interiorly of an interior wall of the reactor at a distance which is at least equal to an inner

diameter of the nozzles, and said means for tapping-off comprising a shaft (11) connected to the bottom of the lower reaction chamber (3), and of a lesser cross-sectional area than the lower reaction chamber and about less than ¼ of the cross-sectional area thereof, said tapping-off means including a sluice (13) connected to said shaft for tapping-off the reduced material.

4,359,213

TENSION CLAMP FOR THREE OR MORE DIRECTION STRING NETWORKS

Charles W. Bachman, 11 Percy Rd., Lexington, Mass. 02173, and J. Cary Bachman, 6040 N. Lydell Ave., Milwaukee, Wis. 53217

Filed Jan. 21, 1980, Ser. No. 113,482
Int. Cl.³ B25B *1/00*
U.S. Cl. 269—153 **10 Claims**

1. Apparatus for selectively clamping one string of a three or more direction oriented string network in a substantially planar opening defined by the frame of a game racket held in a support fixture to said support fixture, comprising:

A. a mouth defined by opposing substantially planar surfaces of two jaws and associated means for coupling said jaws with said planar surfaces opposite each other,

B. selectively operative means for biasing said opposed planar surfaces towards each other,

C. selectively operative means for coupling said jaws to said support fixture and for supporting said jaws with respect to said frame so that a portion of said jaws extends through said planar opening,

wherein the portion of said jaws adapted for extension through said planar opening between strings of said network, consist of a plurality of teeth, said teeth being defined by inter-tooth grooves having a width at least equal to a predetermined value and having angular orientations and spacings matching the angular orientations and spacings of strings crossing said one string in said string network when said biasing means is operative,

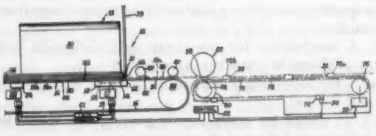
wherein said teeth have substantially trapezoidal cross-sections characterized by equal base vertex angles.

4,359,214

APPARATUS FOR FEEDING FLAT ARTICLES

Charles W. Eldridge, Beverly, Mass., assignor to Paxall, Inc., Chicago, Ill.

Filed Dec. 22, 1980, Ser. No. 218,476
Int. Cl.³ B65H *3/04*
U.S. Cl. 271—5 **10 Claims**



1. Apparatus for removing relatively flat articles from the bottom of a stack and delivering the articles one-by-one in sequence, which apparatus comprises;

a hopper for holding a stack of relatively flat articles,

conveyer means adapted for continuous unidirectional operation that is located below said hopper and extends downstream to a delivery point, said conveyer means including an endless apertured belt,

first chamber means disposed below said endless belt at a location below said hopper,

second chamber means disposed below said hopper at a location upstream of said first chamber means,

first means for connecting said first chamber means with a source of vacuum at a desired time proportional to the desired delivery sequence to cause the lowermost article in said hopper to be engaged by the upper surface of said belt and travel downstream, and

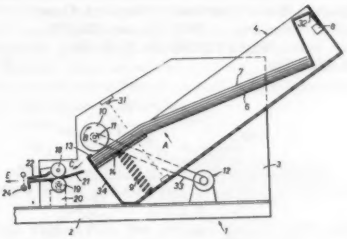
second means for connecting said second chamber means with a source of vacuum independent of the connection of said first chamber means after said lowermost article has traveled downstream sufficiently for its trailing edge to have moved past said second chamber means so that the next lowermost article in said hopper is held in vacuum engagement by said second chamber means and restrained from following the lowermost article.

4,359,215

DEVICE FOR FEEDING SHEETS OF PAPER TO A COPIER

Kurt Ruenzi, Kuesnachterstrasse 59, CH-8126 Zumikon, Switzerland

Filed Aug. 27, 1980, Ser. No. 181,678
Claims priority, application Switzerland, Sep. 7, 1979, 8075/79
Int. Cl.³ B65H *3/30*
U.S. Cl. 271—22 **7 Claims**

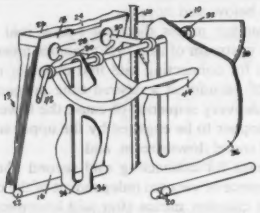


1. A device for feeding single sheets of paper into a copier, comprising slide-in means (1) insertable into said copier, exchangeable paper stack support means (4) in said slide-in means, said paper stack support means comprising a movable bottom (6) and spring means operatively arranged for pressing said bottom against the weight of a stack of sheets resting on said bottom, positively drivable free wheeling, friction roller means operatively arranged in said slide-in means for contacting the top sheet in a stack, transport roller means operatively arranged in said slide-in means downstream of said friction roller means as viewed in the feed advance direction, for receiving a sheet separated from a stack, and sheet separator means (13) operatively located between said friction roller means and said transport roller means for separating a sheet from the top of the stack and wherein said transport roller means comprise first gear wheel means forming part of said transport roller means and a second movably supported gear wheel operatively arranged for meshing contact with said first gear wheel means of said transport roller means and with drive gear means of said copier for transporting a sheet.

4,359,216
FLEXIBLE SHEET FEEDING MECHANISM

Gerard E. Leonard, Kernersville, N.C., assignor to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Continuation of Ser. No. 64,147, Aug. 6, 1979, abandoned. This application Jan. 23, 1981, Ser. No. 227,579
Int. Cl.³ B65H 3/08
U.S. Cl. 271—107 4 Claims

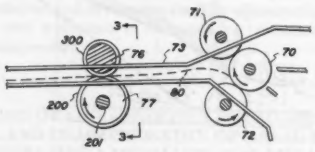


1. In a flexible sheet feeding apparatus of the class having a hopper for receiving and storing flexible sheets and suction means for engaging, transporting and feeding said flexible sheets to a work station, wherein said suction means undergoes simultaneous linear and angular reciprocating motion to peel said flexible sheets from said hopper, the improvement comprising arrangement of said suction means with said hopper so that the plane generated by the path of linear reciprocating motion intersects the plane of the foremost sheet in said hopper at an acute angle; whereby the stroke of said linear motion is reduced, increasing the speed of operation of said apparatus.

4,359,217
INVERTER WITH PROPORTIONAL FORCE PAPER DRIVE

George J. Roller, and Danny J. Prats, both of Rochester, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 2, 1980, Ser. No. 182,919
Int. Cl.³ B65H 29/20, 29/70
U.S. Cl. 271—186 3 Claims



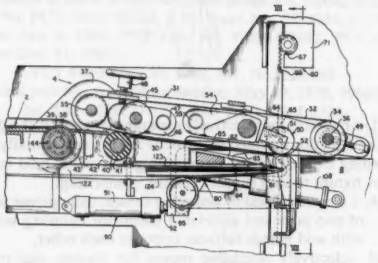
1. A substrate inverter, comprising:
(a) inversion channel means;
(b) input drive means for driving a substrate into said channel means; in an initial incoming direction;
(c) output drive means for driving a substrate out of said channel means in an output direction generally opposite said initial incoming direction; and
(d) corrugation nip means located within said channel means and downstream of said input drive means for corrugating the substrate in a direction generally parallel to the substrate incoming direction to increase the beam strength thereof and applying a continuous force to the substrate in a direction opposite to the initial incoming substrate direction while the substrate is being influenced by said input means and as the last portion of the substrate leaves said input means the force of said nip means will drive the substrate into said output means for movement out said channel means.

3. A method of inverting a substrate, comprising the steps of:
(a) providing an inversion channel means;
(b) providing input drive means for driving a substrate into said channel means in an initial incoming direction;
(c) providing downstream of said input drive means;
(d) corrugating the substrate in a direction generally parallel to the substrate incoming direction by means of said corrugation nip means to increase the beam strength thereof; and
(e) applying a continuous force to the substrate in a direction opposite to the initial incoming substrate direction by means of said corrugation nip means while the substrate is being influenced by said input means so that as the last portion of the substrate leaves said input drive means the force of said corrugation nip means will drive the substrate into an output nip for movement out of the inversion channel means.

4,359,218
CONTINUOUS SHEET COLLECTION AND DISCHARGE SYSTEM

Arthur T. Karis, Lenox, Mass., assignor to Beloit Corporation, Beloit, Wis.

Filed Jun. 23, 1980, Ser. No. 162,136
Int. Cl.³ B65H 29/50, 29/70, 31/10, 31/32
U.S. Cl. 271—188 35 Claims



1. A method for the collecting of sheets in a stacker and the discharge of sheet piles from said stacker, said method comprising:
continuously delivering sheets to a kickoff conveyor means,
passing said sheets in a continuous flow from said kickoff conveyor means into said stacker,
collecting said sheets in a pile in said stacker upon a carrying means,
indexing said carrying means continuously downward at a rate corresponding to the rate at which sheets accumulate in said stacker,
passing segregation means during said indexing into said stacker to segregate the top of said pile from the bottom sheet of a successive accumulation of sheets passing into said stacker, wherein said segregation means causes a cleft,
inserting stationary support means into said cleft to stationarily support said successive accumulation in said stacker away from said pile, while simultaneously raising said kickoff conveyor means relative to said stationary support means to obviate obstruction of said continuous flow of sheets into said stacker with said successive accumulation, and
transporting said pile on said carrying means away from said stacker.

10. A mechanism for the continuous collection and discharge of sheets in a stacker comprising:
means for supplying a continuous seriatim flow of sheets to said stacker,
kick-off means for continuously passing said sheets from a delivery end thereof in said stacker,
reciprocable table means for supporting sheets accumulating

in said stacker in a vertical pile, said table means mounted for descent for a first period at a rate corresponding to the rate at which sheets accumulate in said stacker and for a second period for transporting a predetermined sheet pile accumulation out of said stacker for discharge,

interrupter means for interceding a partition element into said stacker during said first period of descent to segregate said predetermined sheet pile from a succeeding stack accumulation of sheets, and

divider means for inserting into said stacker to stationarily support said succeeding stack in said stacker during said second period of descent.

21. An apparatus for separately supporting successive sheet accumulations in a stacker while further means serve to transport a sheet pile previously formed in said stacker away for discharge and until said further means returns to receive said successive sheet accumulations from said apparatus, said apparatus comprising:

a spear assembly including a lateral array of spaced-apart spears connected at their trailing ends with a frame and extending with their leading ends facing into the stacker,

said frame being mounted for lateral movement on a fixed base,

a drive means for linearly reciprocating said common frame into and out of said said stacker parallel to the longitudinal axes of said spears,

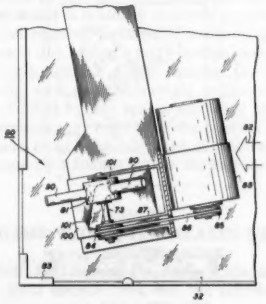
means connecting said drive means to said frame, and

a release means for selectively detaching individual spears from said common frame, said release means including a stationary bracket for supporting the trailing end of detached spears.

4,359,219
DIRECT CONTROL PADDLE WHEEL

Gerald M. Garavuso, Farmington, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 4, 1980, Ser. No. 174,774
Int. Cl.³ B65H *9/10, 9/16*
U.S. Cl. 271—236 **9 Claims**



1. An apparatus for controlling the direction of movement of substrates comprising:

paddle wheel means for driving a substrate, said paddle wheel means having at least one blade attached thereto and in driving relationship with a substrate;

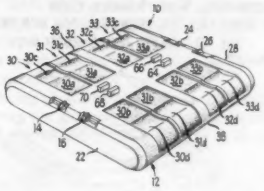
force producing means for rotating said paddle wheel means and thereby moving said blade in a first direction of travel to drive the substrate therewith;

direction control means located in the path of said first direction of travel such that at a point of rotation of said paddle wheel means said blade is deflected from said first direction of travel into a second direction of travel, whereby substrates being driven in said first direction of travel are driven in said second direction of travel.

4,359,220
MICROCOMPUTER CONTROLLED GAME

Howard J. Morrison, Deerfield, and Rex M. Harper, Chicago, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Feb. 8, 1980, Ser. No. 119,887
Int. Cl.³ A63F *9/00*
U.S. Cl. 273—1 E **31 Claims**



1. A sequencing game comprising:

means for generating a sensorially perceptible time sequence of events, said sequence generating means including means for generating a plurality of distinct sensorially perceptible events in a predetermined time sequence and at a predetermined time rate;

means actuable by a participant for responding to said time sequence of events;

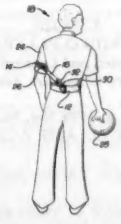
means coupled to said time sequence generating means and to said participant actuable means for determining the correctness of the participant's response, said correctness determining means providing a first indication when said participant actuable means are actuated in a predetermined sequence corresponding to the sequence generated by said time sequence generating means and for providing a second indication when said participant actuable means are actuated in a time sequence other than said predetermined time sequence; and

means responsive to said second indication for generating an error signal and to said first indication for having said time sequence generating means generate another different subsequent time sequence of events, said another time sequence of events being one event longer than said previous time sequence of events.

4,359,221
METHOD FOR ASSISTING BOWLERS IN MAINTAINING AN OPTIMUM FOLLOW-THROUGH ANGLE

Wilson G. Taylor, P.O. Box 146, San Gabriel, Calif. 91776

Filed Jun. 16, 1980, Ser. No. 159,824
Int. Cl.³ A63B *69/00*
U.S. Cl. 273—54 B **2 Claims**



1. A method for assisting a bowler in maintaining an optimum shoulder axis/arm swing relationship comprising attaching a restraining strap to the bowler so that it extends from a location on the back of the bowler's torso to the upper portion of the bowler's free arm at the bicep, the length of the strap

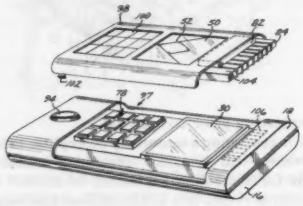
being such that it resists shoulder axis movement away from the optimum position.

4,359,222

HAND-HELD ELECTRONIC GAME PLAYING DEVICE WITH REPLACEABLE CARTRIDGES

Jay Smith, III, Pacific Palisades; Gerald S. Karr, Venice, and Lawrence T. Jones, Playa Del Rey, all of Calif., assignors to Smith Engineering, Santa Monica, Calif.

Filed Oct. 30, 1978, Ser. No. 955,781
Int. Cl.³ A63B 71/04; A63F 9/14
U.S. Cl. 273—85 G **33 Claims**



9. A compact electronic device adapted for actualizing a program on a visual display, the device comprising:

a housing;

a liquid crystal display unit contained within the housing;

at least one cartridge unit capable of being removably attached to the housing;

a microprocessor and memory unit contained within the cartridge unit, the memory unit defining a program to be activated by active participation of a person and displayed on the display unit;

an electronic module contained within the housing and being operatively connected to the memory unit in the assembled electronic device, the electronic module including control means for bringing about predetermined responses in the memory unit, upon selective manipulation by a player, the electronic module adapted for transmitting signals from the memory unit to the display unit whereby the display unit displays visual symbols in accordance with the program objectively determined in the memory unit and subjectively determined by the player, and

an overlay integrally included in the cartridge unit, the overlay disposed in a special relationship relative to the display unit wherein the display unit is viewed through the overlay, the overlay having a permanently affixed graphic pattern thereon whereby a visual effect of the program displayed on the display unit is further defined by the graphic pattern.

4,359,223

INTERACTIVE VIDEO PLAYBACK SYSTEM

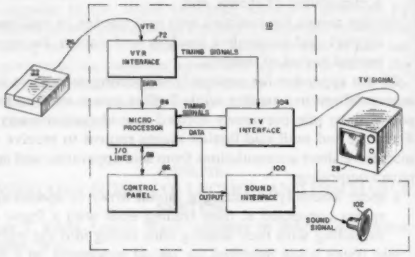
Ralph H. Baer, Manchester, and Leonard D. Cope, Merrimack, both of N.H., assignors to Sanders Associates, Inc., Nashua, N.H.

Filed Nov. 1, 1979, Ser. No. 90,830
Int. Cl.³ A63F 9/22
U.S. Cl. 273—85 G **20 Claims**

1. An interactive video training and amusement system, comprising:

a video playback source of video signals of a television format for providing both pictorial training or amusement information to be displayed on the screen of a cathode ray tube display and digital data pertaining to said pictorial training or amusement information, said digital data being related to said pictorial training or amusement information on a field-by-field basis and identifies position and/or the nature of a video object in the pictorial portion of the video signals;

means for generating signals which when coupled to a cathode ray tube display will cause display thereon of symbols distinct from the pictorial training or amusement information provided by the video signals from the video playback source;



means for receiving said digital data for providing an input to said means for generating signals for influencing the signals generated thereby so as to alter the display on the cathode ray tube display; and

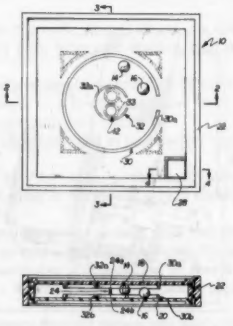
means for coupling said video playback source of video signals and said means for generating signals to a cathode ray tube display.

4,359,224

MANIPULATIVE FLUID-FILLED GAME

John R. Nottingham, 4875 Stacy Ct., Richmond Heights, Ohio 44143, and John W. Spirk, 2533 Euclid Heights Blvd., Cleveland Heights, Ohio 44106

Filed Jan. 28, 1981, Ser. No. 229,147
Int. Cl.³ A63F 7/04
U.S. Cl. 273—115 **6 Claims**



1. A hand manipulated game comprising a fluid chamber formed between a pair of spaced apart walls which are in parallel relation to each other, a body of fluid filling said chamber, target means in the fluid chamber, at least one pair of balls within the chamber, one ball having a lower specific gravity than the fluid which fills the chamber and the other ball having a higher specific gravity than the fluid which fills the chamber, the diameters of each of the balls being slightly smaller than the spacing between the parallel spaced apart walls, said pair of balls being movable in the fluid chamber into predetermined relation to the target means to successfully complete the game, said parallel spaced apart walls being translucent so that the target means and the movement of the pair of balls in the chamber are visible therethrough as the chamber is manipu-

lated, the ball having a rolling action with respect to the walls, and the motion of the pair of balls being substantially two dimensional when viewed through the translucent spaced apart walls.

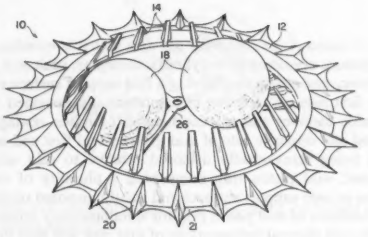
4,359,225
GAME BALL ENTRAPMENT DEVICE

Blanche N. Baldorossi, and Raymond F. Baldorossi, both of 3702 Meadowbrook Ave., Orlando, Fla. 32808

Continuation-in-part of Ser. No. 800,842, May 26, 1977, abandoned, which is a division of Ser. No. 573,773, May 1, 1975, Pat. No. 4,026,561. This application Nov. 27, 1978, Ser. No. 963,822

Int. Cl.³ A63B *69/36*

U.S. Cl. 273—178 A **13 Claims**



10. A ball trap for use in connection with a type of golf game, comprising a generally ring-shaped base member, around the inner portion of which a plurality of inwardly directed, elongate tines of narrow width are disposed in spaced relation, each tine normally being supported by an individual hinge means at an angle in the range between 35 degrees and 55 degrees to the horizontal, each hinge means enabling its respective tine to pivot downwardly during entry of a ball into the trap, said tines being spaced apart a distance substantially corresponding to the width of a tine body, said tines being sized in relation to the ball used therewith such that the tip portion of each tine is normally available to contact the midportion of a ball entering the trap and thus accomplish a chocking action, each tine having a body portion designed to resist bending at such time as a ball entering the trap forcibly contacts its tip, such that the forward motion of such ball is effectively chocked by tine action, the hinge of each of said tines also permitting the respective tine to pivot upwardly for a limited extent, to an essentially vertical position on occasion, so as to prevent by a fencing action, the ball leaving the trap.

4,359,226
BOARD GAME WITH INTERRELATED CARDS AND CHIPS

Robert A. Neff, 5767 Sebring Dr., Indianapolis, Ind. 46254

Filed Apr. 25, 1980, Ser. No. 143,744

Int. Cl.³ A63F *3/00*

U.S. Cl. 273—243 **11 Claims**

1. A game involving the concepts of Karma for the entertainment of two or more persons comprising:

currency,

a set of dice,

a marker for each person,

a board having a closed circuit made up of a plurality of adjacent, indicia-bearing spaces arranged seriatim, said closed circuit being divided into two or more sections, each section including a portion of the spaces and indicia to represent a span of life, and ending with a barrier space and beginning with a return space and including intermediate spaces with indicia defining a Karma space corresponding to Karma collection cards and a payback space corresponding to Karma payback cards,

a number of Good Karma chips,

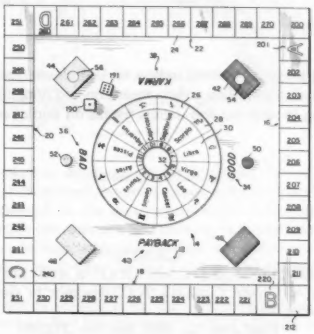
a number of Bad Karma chips,

two sets of Karma collection cards, one set of Bad Karma cards bearing indicia correlated to currency and a Bad Karma chip and the other set of Good Karma cards bearing indicia correlated to currency and a Good Karma chip,

two sets of Karma payback cards, one set of Bad Karma payback cards bearing indicia correlated to currency and the other set of Good Karma payback cards bearing indicia correlated to currency,

said barrier space bearing indicia of an amount of currency and the associated return space,

said game being played by a process in which each player in turn throws the dice and moves his marker from space to space on the closed circuit the number of spaces corresponding to the number on the dice after each throw, follows indicia on the space where his marker comes to rest and, if the space is a Karma space, chooses either a Good Karma card or a Bad Karma card and, if the space is a payback space, chooses either a Good Karma payback card or a Bad Karma payback card, expends Good or Bad Karma chips and either receives or expends currency in compliance with the indicia provided on each space on which his marker comes to rest or on the Good and Bad Karma cards or the Good and Bad Karma payback cards, and stops at each barrier space, expending the amount of currency required at each barrier, if possible, before proceeding on and if not possible, returning his token to the return space,



the game involving a race between the players to complete a number of transits of the closed circuit and to dispose of all Bad Karma chips.

4,359,227
GAME OF CHANCE

Joseph Porciello, 12 Marie Dr., Apt. 9, Seymour, Conn. 06483

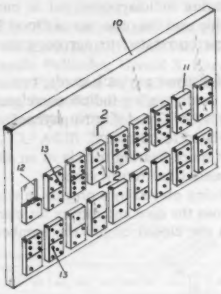
Filed Mar. 30, 1981, Ser. No. 249,026

Int. Cl.³ A63F *3/00*

U.S. Cl. 273—268 **1 Claim**

1. A game of chance comprising a flat board, a plurality of positioning means in the form of recesses located on said board, a plurality of tokens formed as dominos which correspond in number to the number of recesses on said board, each of said dominos being arranged in one of said positioning recesses, each of said dominos having indicia means formed on one surface thereof, said indicia means ranging from 2 to 12 less one indicia within said range, a chance indicating means having indicia formed thereon corresponding to the range of indicia means on said dominos plus said one less indicia, said dominos being detachably disposed in said positioning recess whereby said dominos can be readily removed from or turned over by the matching of the indicia means of said dominos by the

corresponding indicia produced by said chance means during the play of the game, and said chance means being passed to



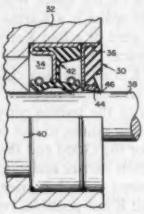
the next player when said indicia on said chance means fails to match a corresponding indicia means on said dominos or corresponding to said one less indicia means on said chance means.

4,359,228

LINECUTTER SEAL, APPARATUS AND METHOD

Douglas A. Cather, Gastonia, N.C., assignor to Garlock Inc., Longview, Tex.

Filed Jun. 12, 1981, Ser. No. 273,096
Int. Cl.³ F16J 15/54
U.S. Cl. 277—1 24 Claims



1. A linecutter seal comprising:

(a) an annular metal shell including a cylindrical portion and a radial flange extending radially inwardly from the axially inner end of said cylindrical portion, said cylindrical portion having an outside diameter adapted to press-fit in a housing bore;

(b) a molded elastomeric body bonded to said cylindrical portion and to said radial flange, said body being located radially inwardly of said cylindrical portion and axially outwardly from said radial flange; and

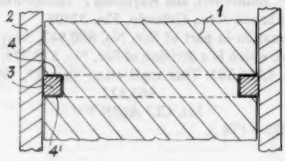
(c) an annular ring of tough, low coefficient of friction, abrasion-resistant material tough enough to cut nylon fishing line, said ring being bonded to the radially inner generally cylindrical surface of said elastomeric body, said ring having an annular inside diameter shaft contacting surface that in its free, formed shape, tapers radially inwardly and axially outwardly, said ring also having an axially outer radial surface that forms an acute angle with said annular inside diameter surface, said shaft contacting surface and said radial surface of said ring meeting at a sharp linecutter edge.

4,359,229

PISTON RINGS WITH CONTROL SLITS

Leopoldo Cattaneo, Via De Alessandri 1, 20144 Milano, Italy

Filed May 22, 1980, Ser. No. 152,495
Claims priority, application Italy, Jun. 1, 1979, 23192 A/79
Int. Cl.³ F16J 9/12
U.S. Cl. 277—216 12 Claims



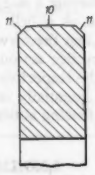
1. A piston ring suitable for use on a movable member, such as a piston, operating on a cylindrical surface, such as a cylinder liner, said piston ring having a first support surface resting on a first side of a groove circumferentially provided in the movable member and a second support surface resting on a second and opposite side of said groove, said first and second sides being transversally disposed relative to said movable member, said piston ring comprising a plurality of control means on said support surfaces and axially disposed relative to the thickness of said piston ring for simultaneously controlling elastic and thermal deformations of said ring and heat flowing across said ring in various positions of said ring assumed during motion thereof.

4,359,230

PISTON RING WITH WEAR RESISTANT COATING

Ludovico Bruni, Turin, Italy, assignor to Associated Engineering Italy S.p.A., Turin, Italy

Division of Ser. No. 12,820, Feb. 16, 1979, abandoned. This application Aug. 11, 1981, Ser. No. 292,127
Claims priority, application United Kingdom, Feb. 16, 1978, 6114/78
Int. Cl.³ F16J 9/20, 9/22
U.S. Cl. 277—216 1 Claim



1. A piston ring for use in a reciprocating internal combustion engine or in a compressor, said ring having an outer peripheral surface provided with a rotary finish machined curved center portion, rotary finish machined chamfer edges and a final finish plated wear-resistant coating evenly over the complete outer peripheral surface.

4,359,231

STEERING MECHANISM FOR THREE-WHEELED VEHICLES

Kevin M. Mulcahy, 3703 Wild Orchard La., Ft. Pierce, Fla. 33450

Filed Jun. 23, 1980, Ser. No. 161,661
Int. Cl.³ B62D 9/02
U.S. Cl. 280—87.01 4 Claims

1. A three-wheeled vehicle comprising, in combination:

an elongate frame member including a planar web normally

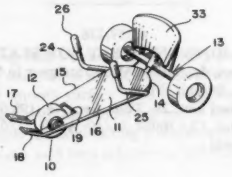
carried in a substantially horizontal position for supporting a driver-passenger, said frame member having a longitudinal axis of rotation about which it may turn enabling said planar web to assume positions angled relative to the horizontal,

a front wheel journalled in a pair of bearings adjacent to front end portion of said frame member,

a rear axle assembly journalling a rear wheel at each end thereof, the diameter of the two wheels of said axle assembly being greater than the diameter of said front wheel,

a pivot post fixed to and extending rearwardly and upwardly at an angle with respect to a rear end portion of said frame member,

a sleeve bearing fixed with respect to a central portion of



said axle assembly, said pivot post being journalled in said sleeve bearing,

the position of said front wheel bearings in said vehicle being below the position of said sleeve bearing so said axis of rotation of said frame member is higher in the back of the vehicle than in the front whereby, upon the driver-passenger seated upon said frame member shifting his weight to either side, said axle assembly will be moved for turning of said vehicle in the direction of said weight shift,

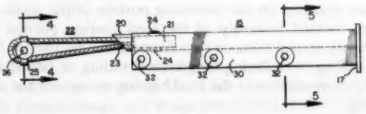
and a back rest located behind said rear end portion of said frame member rigidly fixed to said rear axle assembly to move in unison therewith and independently of said frame member enabling said driver-passenger to control movement of said axle assembly by pressure of his back upon said back rest.

4,359,232

MUD FLAP BRACKETS FOR TRUCKS, TRACTORS, TRAILERS AND THE LIKE

Arthur Maccari, Sr., 1311 Church St., Philadelphia, Pa. 19124

Filed Jan. 12, 1981, Ser. No. 224,219
Int. Cl.³ B62D *25/16*
U.S. Cl. 280—154.5 R **4 Claims**



1. A mud flap bracket for mounting to the frame of a vehicle for attachment of a mud flap which comprises

a plate member secured to said frame,

a bar extending perpendicularly from said plate member and detachably carrying said mud flap,

a mounting member extending from said plate member in parallel relation to said bar,

said mounting member is hollow and extends outwardly beyond said bar,

said flexible member is a loop of cable secured in said mounting member,

said mounting member is a tube,

the end of the tube is beveled to permit downward movement of the flexible member, but to restrict upward movement of said flexible member, and

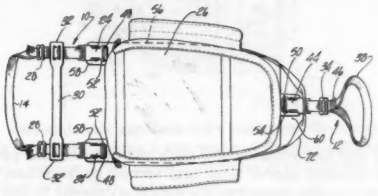
said mud flap is supported along its top portion by said bar and said flexible member.

4,359,233

MOTORCYCLE TANK BAG MOUNTING ARRANGEMENT

W. Shaun Jackson, 809 Sycamore, Ann Arbor, Mich. 48104, and Leslie E. Bohm, 29560 Rutherland, Southfield, Mich. 48076

Filed Jul. 21, 1980, Ser. No. 170,430
Int. Cl.³ B62J *7/02*
U.S. Cl. 280—289 A **10 Claims**



1. A mounting arrangement for a motorcycle of the type having a gasoline tank mounted between the steering head and the seat thereof on the motorcycle frame, including a front frame portion intermediate said steering head and said gasoline tank at the forward edge thereof and rear frame portions extending adjacent the rear of said gasoline tank forward of said motorcycle seat, said mounting arrangement comprising:

a first harness adapted to encircle one of said frame portions including a first harness strap having end portions thereof and including means retaining said ends thereof atop said gasoline tank in laterally spaced apart positions thereon;

a second harness comprising a second harness strap encircling the other of said motorcycle frame;

a plurality of fastener means elements, two secured to one of said first or second harness strap portions thereof and one secured to the other of said first or second harness straps;

a motorcycle tank bag configured to fit atop said motorcycle gasoline tank and including a plurality of fastener means elements located in correspondence with and matable with said harness for fastener means elements secured to said first and second harness means, said bag and harness fastener elements being movable into mating relationship to secure said tank bag to said first and second harnesses whereby to produce the three-point support therefor.

4,359,234

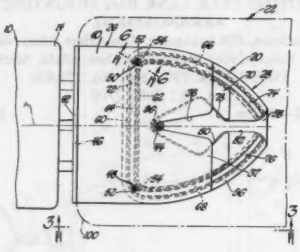
FIFTH WHEEL ASSEMBLY FOR TRACTOR-TRAILER COMBINATION

Roy A. Mittelstadt, Sterling Heights, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 2, 1981, Ser. No. 239,558
Int. Cl.³ B62D *52/08*
U.S. Cl. 280—438 R **5 Claims**

1. A fifth wheel device for coupling a tractor unit to a trailer unit and for providing relative articulation therebetween, one of said units having a pair of pivot members connected thereto; the other of said units having a guide track comprising a first track section, a second track section, and a third track section, said first track section being located along an axis which extends transversely to the longitudinal center axis of said other of said units, with one end portion of said first track section connected to said second track section and the other end portion of said first track section connected to said third track section so as to form a continuous guide track for said pair of pivot members; said second track section and said third track section extending rearwardly from said first track section and the spacing between said pair of pivot members being such that

during straight-ahead alignment of said tractor unit and said trailer unit, one of said pair of pivot members is located adjacent said one end portion of said first track section and the other of said pivot members is located adjacent said other end portion of said first track section, but during a turning maneuver in one direction one of said pair of pivot members moves



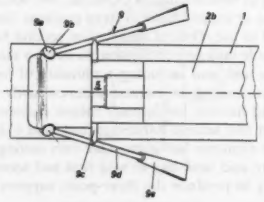
along said first track section while the other of said pair of pivot members moves along said second track section, and during a turning maneuver in a direction opposite to said one direction, said other of said pair of pivot members moves along said first track section while said one of said pair of pivot members moves along said third track section.

4,359,235

SKI BRAKE

Heinz Wittmann, Vienna, Austria, assignor to TMC Corporation, Baar, Switzerland

Filed Dec. 1, 1980, Ser. No. 211,868
Claims priority, application Austria, Nov. 30, 1979, 7622/79
Int. Cl.³ A63C *7/10*
U.S. Cl. 280—605 **18 Claims**



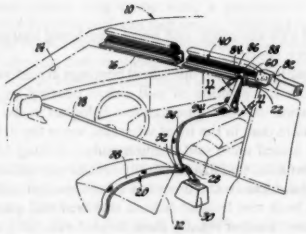
1. In a ski brake having a base plate, a pedal and two braking mandrels which project, in a braking position, next to the two ski edges below the running surface of the ski and which are each the free end of a respective, pivotally supported braking arm, first swivel axes of said braking arms each extending transversely with respect to the ski and being inclined in relationship thereto, said braking arms being movably supported on guide surfaces which extend normal to the respective first swivel axes and being pivotal about second swivel axes against the urging of an erecting spring from the braking position into a fully retracted position in which the two braking arms are held approximately parallel with respect to the upper side of the ski and at least partially above the same, the improvement comprising wherein each said braking arm has a head; wherein said guide surface for each individual braking arm is defined by a receiving recess constructed in a frame of said pedal and in the fully retracted position forms an acute angle with respect to the upper side of the ski, in which receiving recesses said heads of said individual braking arms are supported on said guide surfaces, said braking arms each being pivotal about a said first axis which is normal to said guide surface in the associated receiving recess of said pedal; wherein each of said braking arms has a nipple which is supported in a respective holding opening provided in said base plate and, in relationship to the longitudinal axis of the ski, is movable transversely back and forth; wherein in alignment with said two holding openings in said base plate there are provided bearing openings in bearing plates of said base plate, each said bearing opening receiving a respective bearing pin of an approximately omega-shaped bearing bar, said bearing bar including a support part at a location remote from said two bearing pins, said support part including support legs and portions of said support legs, at least in the fully retracted position, being received in a groove in said pedal, and said pedal being movably supported on a portion of said support part; and wherein said pedal has on an end thereof which is remote from said second swivel axes a flattened surface which extends at an acute angle with respect to the plane of the undersurface of said pedal.

4,359,236

GUIDE RING ASSEMBLY FOR SEAT BELTS

Lloyd W. Rogers, Jr., Utica, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 20, 1980, Ser. No. 199,005
Int. Cl.³ B60R *21/10*; A62B *35/02*
U.S. Cl. 280—804 **3 Claims**



1. A guide ring assembly adapted to mount a seat belt on a vehicle for longitudinal sliding movement therethrough comprising:

a guide ring having a mounting portion by which the assembly is adapted to be mounted on the vehicle and a load bearing portion over which the belt is longitudinally slidable, said load bearing portion being arcuately disposed about the mounting portion and having a circumferential extent greater than the width of the belt to permit lateral shifting of the belt along the circumferential extent of the arcuate load bearing portion to thereby accommodate variation in the angle of belt departure and entry relative the mounted position of the guide loop assembly; and

means mounted on the mounting portion of the guide ring and located inwardly of the load bearing portion at a closely spaced distance therefrom to prevent the belt from doubling over during longitudinal sliding or lateral shifting movement over the load bearing portion of the outer ring.

4,359,237

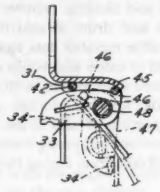
STATIC BELT LOOP SNUBBER SYSTEM

James A. Gavagan, Centerline; Ronald S. Gulette, Farmington Hills; Carl M. Petersen, III, Drayton Plains; Frank West, St. Clair Shores, and William E. Brennan, Troy, all of Mich., assignors to Irvin Industries Inc., Madison Heights, Mich.

Filed Apr. 7, 1980, Ser. No. 137,838
Int. Cl.³ B60R *21/10*
U.S. Cl. 280—806 **1 Claim**

1. Static loop snubber means for use in a vehicle safety belt system having retracting means for storing belt webbing, including attachment means for mounting on said vehicle at a

position adjacent an occupant seat involving a change in the direction of belt webbing between the retracting means and occupant restraining portion of the belt, means for maintaining free webbing loop passage throughout normal positioning and retracting tension applied to the belt, means responsive to initial occupant imposed belt loading above a predetermined



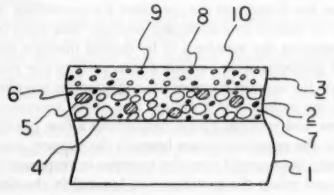
value for locking belt webbing against loop passage from the retracting side, said means for locking including a snubbing bar and an arcuate smooth surface loop passing bar movable into snubbing relation with said snubbing bar to effect said locking action, and means for establishing a non-destructive minimum clearance between said bars relative to webbing thickness.

4,359,238

IMAGE-RECEIVING SHEET

Shigeru Tsubusaki, Hirakata, and Yuji Takashima, Nishinomiya, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Sep. 22, 1980, Ser. No. 189,941
Claims priority, application Japan, Sep. 21, 1979, 54-122319
Int. Cl.³ B41M *5/22*
U.S. Cl. 282—27.5 **11 Claims**



1. An image-receiving sheet for receiving an electrostatically formed image, said image comprising particles containing a sublimable dye-former on which is fixed a colored image obtained by making said sublimable dye-former react with a developer contained in the sheet, said sheet comprising:

a support member;

a color developing layer formed on said support member and containing a developer material which reacts with a sublimable dye-former to develop a color, the surface resistivity thereof being less than $10^9\Omega$; and

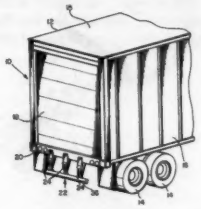
a dielectric layer formed on said color developing layer through which sublimed dye-former gas can pass to said color developing layer, said dielectric layer comprising a fine inorganic powder and a transparent binder-resin having high resistivity.

4,359,239

UNDERRIDE DEVICE FOR A TRAILER OR TRUCK

Walter S. Eggert, Jr., Huntington Valley, Pa., assignor to The Budd Company, Troy, Mich.

Filed Dec. 15, 1980, Ser. No. 216,247
Int. Cl.³ B60R *19/02, 21/14*
U.S. Cl. 293—132 **6 Claims**



1. Anti-underride apparatus for a trailer and the like including a main body having a rear wall and floor comprising:

(a) a support beam secured transversely to said main body below said floor and rear wall;

(b) a guard beam spaced below said support beam; and

(c) energy absorbing means fixedly secured between said support beam and said guard beam comprising a plurality of spaced corrugated components secured to the rearwardly facing portion of said support beam and extending substantially in a vertical plane between said support beam and said guard beam, a reinforcement component extending from the forwardly facing portion of said support beam and connected to said support beam and said guard beam and being capable of yielding adjacent said support beam for controlling movement of said guard beam, and;

(d) said energy absorbing means having a predetermined level of resistance to forward movement of said guard beam upon application of force in a forwardly direction thereto.

4,359,240

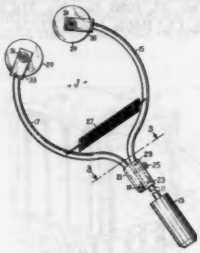
DEVICE FOR SMALL CYLINDRICAL AND FOR PENETRATABLE OBJECTS

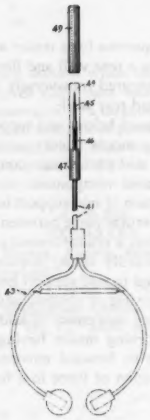
Clarence E. Woeber, Rte. 1, Box 130, Plainview, Ill. 62676

Continuation-in-part of Ser. No. 53,191, Jun. 29, 1979, abandoned. This application Sep. 30, 1980, Ser. No. 192,612
Int. Cl.³ B25J *1/00*
U.S. Cl. 294—24 **6 Claims**

1. A pickup device for grasping and handling cylindrical objects, comprising: a support shaft of average adult-waist-height length; a pair of pivotally connected arcuate jaw elements fixed to the lower end of said shaft so as to be relatively swingable away from and then toward each other to grasp one of said objects; means for adjusting the initial gap width; tension coil-spring means for gently biasing said jaw elements toward grasping positions; the ends of said jar elements being large-diameter-rollers constructed and arranged to provide such low-friction engagement with the surface of a cylindrical object that when gently pressed against said object said jaw elements will be cammed apart for automatic slip-over grasp-

ing of said object, each of said large-diameter rollers having a diameter at least 30% of the transverse diameter of the closed-





jaw area, and being mounted on an axle parallel to the swing axis of said jaws.

4,359,241

DRUM HOLDER

Kenneth Kistner, P.O. Box 132A, Delta, Ohio 43515

Filed Nov. 10, 1980, Ser. No. 205,460

Int. Cl.³ B66C *1/14*

U.S. Cl. 294—78 R **6 Claims**

1. An improved drum handling implement for engaging a drum comprising a collar having a central opening, two arms having a first end rigidly attached to said collar and a second end spaced apart from said collar, said arms extending outwardly from said central opening at a predetermined angle, a plurality of hooks each having a shank and prong means for engaging the drum, said shank and said prong means being disposed to form an interior angle of 30°, means for flexibly connecting said shank of one of said hooks to said second end of each of said arms, an elongated flexible member having a first end and a second end, said flexible member extending through said central opening in said collar, one of said hooks connected to said first end of said flexible member, and means operatively connected to said second end of said flexible member for lifting said implement, whereby said hook connected to said first end of said flexible member is drawn into secure engagement with said drum as said implement is lifted and whereby said flexible member acts against said collar as said implement is lifted to cause said hooks connected to said arms to move into secure engagement with said drum, said prong means of said hooks forming an angle of not greater than 90° with a sidewall portion of said drum positioned below said prong means to prevent said prong means from slipping on said sidewall portion of said drum during the handling of said drum.

4,359,242

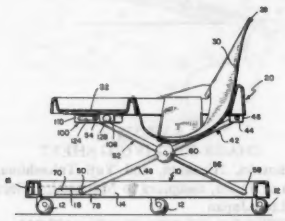
COLLAPSIBLE BABY WALKER-JUMPER

Donald L. Gerken; Donald L. Moore, both of Columbus, Ind., and Stephen M. Degnen, Columbus, Ohio, assignors to Cosco, Inc., Columbus, Ind.

Filed Sep. 14, 1981, Ser. No. 302,305

Int. Cl.³ A47D *13/04;* B62D *7/10*

U.S. Cl. 297—5 **12 Claims**



1. A walker-jumper comprising a base member, a support member, a seat carried by the support member, a frame operably connecting the base and support members, coupling means between the frame and the members for permitting the members to be moved to a collapsed position near each other and for permitting the members to be moved through several expanded positions with various distances between each other, means on the support member for engaging the coupling means to lock the members in a desired one of the several expanded positions, and resilient means connecting a first portion of the frame to the coupling means beneath the support member for permitting the support member to move in response to weight on the seat when the members are located in the desired expanded position.

4,359,243

MUSICIAN'S CHAIR

Lewis P. Crutcher, 25 Upper Alcatraz Pl., Mill Valley, Calif. 94941

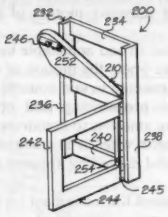
Filed Jul. 6, 1979, Ser. No. 55,289

Int. Cl.³ A47C *4/00, 4/04*

U.S. Cl. 297—16 **14 Claims**

1. A chair for musicians and other performing artists, comprising a seat element which is elongated upon one side for supporting one leg of a performer using the chair, the other side of the seat element being angularly cut away in order to permit freedom of movement for the performer's other leg, the seat element having generally a truncated, right triangular

configuration with the elongated side of the seat element being generally perpendicular to a rear edge of the seat element and



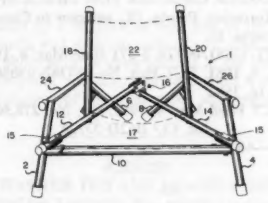
forming an acute angle with the angular cutaway, and a triangular support structure for the seat element.

4,359,244

FOLDING CHAIR

Ronald E. Koehm, 27703 Ortega Hwy., #11, San Juan Capistrano, Calif. 92675

Filed Jul. 22, 1980, Ser. No. 171,208
Int. Cl.³ A47C *4/00*; A47D *1/02*
U.S. Cl. 297—16 **17 Claims**



1. A folding chair comprising:
first and second seat support members,
leg means pivotably connected to said seat support members,
back support means pivotably connected to said seat support members,
first coupling means to pivotably interconnect said first and second seat support members,
said first and second seat support members adapted for movement in a horizontal plane and in directions toward one another, whereby to correspondingly cause said leg means and said back support means to be moved in directions respectively towards one another, and
a third seat support member pivotably connected between said first and second seat members and adapted for movement in the horizontal plane of said first and second seat support members,
said leg means and said back support means adapted to be pivoted through respective vertical planes and into the horizontal plane of said first, second, and third seat support members, so that in a folded configuration, each of said seat support members, said leg means, and said back support means is compactly arranged in substantially parallel alignment with one another in said horizontal plane.

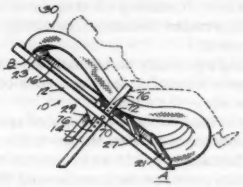
4,359,245

CHAIR-RECLINER

Thomas A. Franke, 224 Hill St., Hartland, Wis. 53029

Filed Jul. 2, 1980, Ser. No. 165,242
Int. Cl.³ A47C *3/00*
U.S. Cl. 297—284 **8 Claims**

1. An article of furniture adapted to be used selectively as a chair or as a recliner, comprising a vertically inclined supporting framework including a normally lower end and a normally upper end, leg means carried by said framework for supporting said framework in vertically inclined position, a chair-recliner body mounted on said framework, said body comprising a deformable resilient member, means connecting the respective opposite longitudinal ends of said deformable resilient member to said framework at locations respectively contiguous said normally lower end and contiguous said normally upper end of said framework, the length of said resilient member exceeding



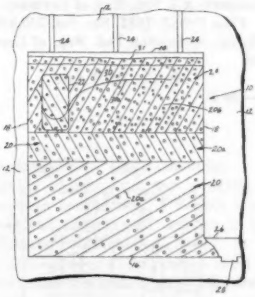
the distance between said locations at which said ends of said resilient member are connected to said framework, whereby said body and said resilient member assume a normally vertically extending arch-like arcuate shape when said body and said resilient member are in an "at rest" predeformation position, said body and said resilient member being deformable by the weight of a user from said arch-like arcuate shape selectively into a chair shape or into a recliner shape in accordance with the positioning of the user's body weight on said chair-recliner body.

4,359,246

IN SITU OIL SHALE RETORT WITH NON-UNIFORMLY DISTRIBUTED VOID FRACTION

Thomas E. Ricketts, Grand Junction, Colo., assignor to Occidental Oil Shale, Inc., Grand Junction, Colo.

Filed Aug. 11, 1980, Ser. No. 176,679
Int. Cl.³ E21B *43/247*; E21C *41/10*
U.S. Cl. 299—2 **21 Claims**



1. A method for flattening a combustion zone in a fragmented permeable mass of formation particles containing oil shale in an in situ oil shale retort in a subterranean formation containing oil shale, the method comprising the steps of:
(a) explosively expanding unfragmented formation for forming a fragmented permeable mass of formation particles comprising a first generally horizontally extending layer of formation particles extending substantially across the entire horizontal extent of the retort, the first layer having an effective average void fraction greater than the effective average void fraction of second generally horizon-

tally extending adjacent layers of formation particles above and below such a first layer;

(b) establishing a combustion zone in an upper region of the fragmented permeable mass above the first layer;

(c) advancing the combustion zone downwardly through the fragmented permeable mass; and

(d) spreading the combustion zone laterally across the first layer for forming an approximately flat combustion zone across substantially the entire horizontal extent of the retort.

10. A method for forming a fragmented permeable mass of formation particles containing oil shale in an in situ oil shale retort in a subterranean formation containing oil shale, comprising the steps of:

(a) excavating a generally horizontally extending void in the subterranean formation, leaving a zone of unfragmented formation above the void;

(b) forming at least two arrays of spaced apart substantially vertical columnar explosive charges in the zone of unfragmented formation, a first array nearest the void and a second array more remote from the void, the second array having a powder factor higher than the powder factor of the first array; and

(c) detonating the first array of explosive charges for explosively expanding a lower portion of the unfragmented formation toward the void, forming a first horizontally extending layer of a fragmented permeable mass of formation particles in the in situ oil shale retort, while leaving a first void space between the first layer of formation particles and the remaining portion of the zone of unfragmented formation and, after a time delay, detonating the second array of explosive charges for explosively expanding an intermediate portion of the unfragmented formation toward the void, forming a second horizontally extending layer of the fragmented permeable mass of formation particles above such a first layer, the second layer having a higher effective average void fraction than the first layer.

4,359,247

BRAKE FOR RAIL VEHICLES

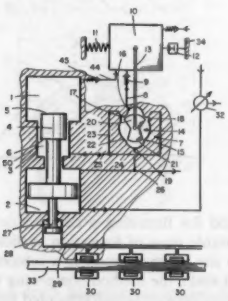
Luitpold Miller, Ottobrunn, Fed. Rep. of Germany, assignor to Thyssen Industrie AG, Fed. Rep. of Germany

Filed Feb. 2, 1981, Ser. No. 230,870

Claims priority, application Fed. Rep. of Germany, Aug. 2, 1980, 3004705

Int. Cl.³ B60T *8/02*

U.S. Cl. 303—24 R **9 Claims**



1. A brake for a rail vehicle comprising:

a working cylinder having an accumulator chamber and a counter pressure chamber;

a differential piston movably mounted in said working cylinder, having a first piston surface communicating with said accumulator chamber, and a second piston surface communicating with said counter pressure chamber;

piston restraining means connected to said working cylinder for restraining and releasing motion of said differential piston;

brake means connected to and actuatable by motion of said differential piston to brake the motion of the vehicle;

a regulating valve connected to said counter pressure chamber for selectively pressurizing said counter pressure chamber by varying amounts to counteract the motion of said differential piston when it is released by said piston restraining means and moved by pressure in said accumulator chamber;

an inertial body mounted for movement on the vehicle in a vehicle travel direction, connected to said regulating valve for actuating said regulating valve to selectively pressurize said counter pressure chamber; and

spring mounting means connected between said inertial body and the vehicle to permit motion of the inertial body with a predetermined deceleration of the travel motion of the vehicle, whereby motion of said differential piston is restrained by pressurization of said counter pressure chamber with attainment of a maximum allowable deceleration of the vehicle.

4,359,248

ROADABLE GROUSER FOR TRACK SHOES

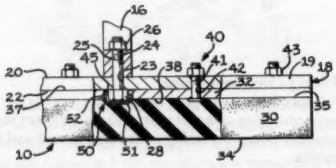
Randall L. Kortering, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US81/00274, § 371 Date Mar. 4, 1981, § 102(e) Date Mar. 4, 1981, PCT Pub. No. WO82/03050, PCT Pub. Date Sep. 16, 1982

PCT Filed Mar. 4, 1981, Ser. No. 278,506

Int. Cl.³ B62D *55/28*

U.S. Cl. 305—46 **10 Claims**



1. A roadable grouser (10) for a track shoe (18), said shoe (18) having at least one track shoe mounting fastener head (28) protruding outwardly from the track shoe (18), comprising:

an elongated upright grouser bar (30) of elastomeric material;

a rigid mounting plate (32) having an aperture (45), said aperture (45) being adapted to receive said fastener head (28), and

a plug (50) fixedly connected to said mounting plate (32), said plug (50) being of a size and orientation sufficient for closing said aperture (45) and forming a continuous uninterrupted bond interface between said mounting plate (32) and said grouser bar (30).

4,359,249

DISPLAY CASE AND A MODULAR DISPLAY CASE SYSTEM

Klaus Fischer, Niederdorfelden, Fed. Rep. of Germany, assignor to Glasbau Heinrich Hahn GmbH & Co. KG, Frankfurt am Main, Fed. Rep. of Germany

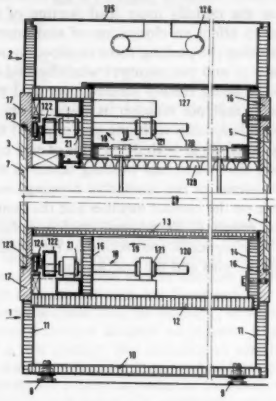
Filed Jul. 8, 1980, Ser. No. 166,850

Int. Cl.³ A47B *53/00, 87/00*

U.S. Cl. 312—198 **4 Claims**

1. In a display case which is generally rectangular in plan elevation, and which has glass panels constituting side walls

and a door, and upper and lower frames for supporting the glass panels, the improvement in which the glass panels are supported by the upper and lower frames so that the outer surfaces of the glass panels constitute the outermost surfaces of the display case, wherein the outermost surfaces of the upper and lower frames are inside the planes of the outer surfaces of



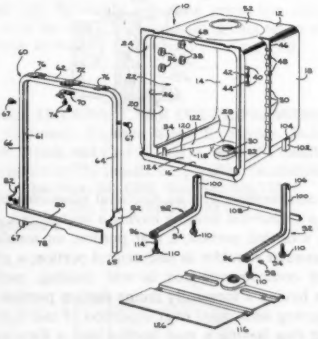
the glass panels by a distance at least half of the thickness of said glass panels, and wherein each of said glass panels at one end thereof abuts with its inner surface at the end face of the adjacent glass panel, and at its other end abuts with its end face at the inner surface of the glass panel adjacent to said other end.

4,359,250

DISHWASHER TUB AND FRAME ASSEMBLY

Thomas E. Jenkins, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Nov. 3, 1980, Ser. No. 203,731
Int. Cl.³ A47B 77/06
U.S. Cl. 312—228 **5 Claims**



1. A tub assembly for a front loading washing appliance to be supported on a generally flat supporting surface, said tub assembly comprising:

a plastic tub comprising a top wall, a back wall, a bottom wall, and two side walls having an open front; an integral support boss extending outwardly from each side wall adjacent the front opening;

a main support frame formed from a narrow, continuous metal member of U-shaped cross-section; said frame formed into an inverted "U" configuration having a base and a pair of depending legs; said main frame positioned about said plastic tub with said base supportingly engaging said tub top wall and each of said depending less supportingly engaging a corresponding tub side wall; said legs extending downwardly beyond said tub bottom for mounting on said supporting surface;

each of said support bosses being received within a corresponding depending leg, fastening means securely interconnecting each corresponding boss and leg to cause the lateral dimension of the front opening to conform to that of said main frame;

a rigid front crossing member fixedly attached to each of said depending legs and extending therebetween beneath said tub and generally parallel to the supporting surface and supportingly engaging said tub bottom wall;

a pair of rigid rear support members, each formed from a narrow continuous metal member of U-shaped cross-section; each rear support member having one end fixedly attached to the lower portion of a corresponding main frame leg, a first section extending rearwardly from said corresponding main frame leg for mounting on the supporting surface and a second section extending upwardly and supporting the rear portion of said tub;

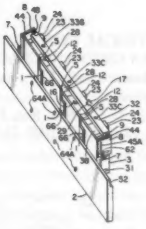
said main frame and said rear support members spacing the bottom wall of said tub above the supporting surface to provide a service space for receiving various operating components.

4,359,251

FOLDING SHELF CABINET

Albert V. Polidoro, 18 E. Gen. Robinson St., Pittsburgh, Pa. 15212

Filed Jan. 21, 1980, Ser. No. 113,697
Int. Cl.³ A47B 77/10; A47F 5/08
U.S. Cl. 312—245 **10 Claims**



1. A folding shelf cabinet which comprises

a cabinet having an open front and including cabinet side walls, a cabinet bottom wall, a cabinet top wall and a cabinet rear wall, the said walls defining an interior space in communication with the open front;

a cover movable between a first position and a second position to overfit the open front in the first position, the cover having cover side walls to which are attached brackets including L-shaped slots, a cover bottom wall, and a cover forward wall, which cover is pivotally connected to the cabinet side walls to optionally enclose the interior space; and

a shelf comprising a forward shelf wall, an underside, and a pair of supporting rods attached to the shelf underside, the rods including a finger adapted for sliding and pivotal engagement within the L-shaped slots,

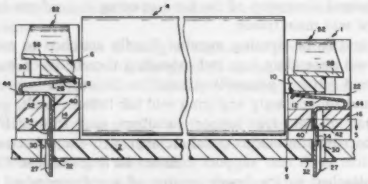
whereby the shelf can be moved between a first position vertically oriented above the cabinet, to a second position horizontally oriented above the cabinet to a third position vertically oriented alongside the cabinet.

4,359,252

SOCKET FOR A BUBBLE MEMORY PACKAGE

Billy E. Olsson, New Cumberland, and Lit Y. Kam, Camp Hill, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Sep. 8, 1980, Ser. No. 185,081
Int. Cl.³ H01R 13/22
U.S. Cl. 339—17 CF 8 Claims



1. A socket for an electronic package in which the socket is adapted for mounting on a circuit board and electrical connections are established between terminals of the socket and circuit pads on said package, the socket comprising:

first and second housings containing respective rows of said terminals, said housings being of different height and having inclined top wall surfaces supporting a circuit element of said package at a desired incline on a circuit board,

said terminals having resilient spring portions projecting outwardly beyond said top wall surfaces and engageable with circuit pads on each said circuit element and being resiliently deflected by each said circuit element seated against said top wall surfaces, and

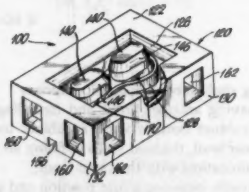
a resilient spring element overlying the reverse side of each said circuit element and clamping each said circuit element against said deflected spring portions and against respective said top wall surfaces.

4,359,253

FEMALE ELECTRICAL CONNECTOR FOR REDUCED PIN GRID APPLICATIONS

James Iantorno, Mamaroneck, N.Y., assignor to Sealectro Corporation, Mamaroneck, N.Y.

Filed Dec. 22, 1980, Ser. No. 218,625
Int. Cl.³ H01R 31/08
U.S. Cl. 339—19 20 Claims



1. An electrical connector for electrically connecting a pair of spaced apart, substantially parallel conductive pin members comprising:

an elongated, hollow housing having top and bottom cover members, said housing further including an elongated actuator means formed integrally therewith, said actuator means extending between said cover members with the longitudinal axis thereof being parallel to the longitudinal axis of said housing; and

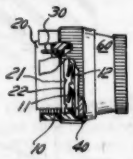
an elongated, continuous electrically conductive contact member, said contact member being resilient and having a dumbbell-shaped configuration, said contact member being disposed about said actuator means in a loose fit relationship, and with the distal ends of said contact member each defining a pair of opposed edges disposed parallel to the mounting direction of the connector, said opposed edges being spaced apart a distance greater than the distance between said spaced apart pin members such that when said connector is initially pushed over said pin members, the pin members resist said pushing action such that the actuator means of said connector housing exerts a force on the radially inner lead portion of said contact member to effect an elongation of said contact member thus reducing the pushing force required to overcome the resistance of said pin members whereby said connector is capable of being readily pushed over said pin members until each said pin member is respectively disposed in abutting relationship with one said opposed edge, in each said pair thereof, at both distal ends of said contact member, such that when said pushing action is stopped, said actuator means of the connector housing ceases to exert said force on the contact member and the contact member tends to revert to its original configuration to effect a secure interference fit and redundant electrical connection between the pins and the contact member.

4,359,254

ELECTRICAL CONNECTOR COUPLING RING HAVING AN INTEGRAL SPRING

David O. Gallusser, Oneonta; Valentine J. Hemmer, Sidney, and Gary C. Toombs, Oneonta, all of N.Y., assignors to The Bendix Corporation, Southfield, Mich.

Filed Nov. 14, 1980, Ser. No. 206,770
Int. Cl.³ H01R 13/639
U.S. Cl. 339—89 M 8 Claims



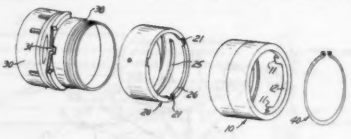
1. In combination with an electrical connector of the type having: a cylindrical housing having a central axis, a forward portion, a central portion, a rear portion, an annular groove and an annular shoulder in said central portion; a plurality of electrical contacts mounted in said housing, each of said contacts having a forwardly facing mating portion; a plastic coupling ring telescoped over a portion of said housing, said coupling ring having a rear portion and a forward portion adapted to connect to a similar housing having contacts that are adapted to mate with the contacts in said housing, and means for rotatably mounting said coupling ring to said housing between said annular groove and shoulder in said housing, the improvement comprising:

means for biasing said coupling ring in the rearward direction, said biasing means including a plurality of resiliently deflectable fingers, integral with said coupling ring and extending forwardly from the rear portion of said coupling ring at an angle with a plane perpendicular to the central axis of said housing.

4,359,255
COUPLING RING HAVING DETENT MEANS

David O. Gallusser, Oneonta, and Ann E. Peterson, Sidney, both of N.Y., assignors to The Bendix Corporation, Southfield, Mich.

Filed Nov. 14, 1980, Ser. No. 206,773
Int. Cl.³ H01R 13/625
U.S. Cl. 339—90 R 1 Claim



1. A first electrical connector assembly for use in connecting to a second electrical connector assembly, the first connector assembly of the type having: a cylindrical housing having a front portion, a rear portion and an annular shoulder on the outside of the housing between the front and rear portions; a coupling ring telescoped over the housing, said coupling ring having a forward portion adapted to connect to said second housing and a rear portion that includes an annular shoulder extending inwardly; means for mounting said coupling ring to said first housing for rotational and axial movement relative to said first housing; and means for selectively preventing rotation of the coupling ring to prevent unwanted rotation of the coupling ring when the first connector assembly and the second connector assembly are coupled together, the improvement wherein the means of preventing rotation of the coupling ring comprises:

at least one rearwardly extending projection mounted on the rear face of the shoulder on said housing, said rearward projection resiliently deflectable in the forward direction;

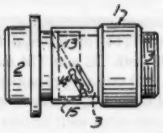
at least one notch in said coupling ring shoulder, said notch adapted to receive the rearwardly extending projection on said housing when said coupling ring is in its forward most position; and

a ring telescopically mounted over the coupling ring for rotational and axial movement relative to said coupling ring, said ring having a forward portion and a rear portion that includes an inwardly extending shoulder that includes at least one forwardly extending projection adapted to mate with the notch in said coupling ring when said ring is pressed forwardly against said coupling ring.

4,359,256
ELECTRICAL CONNECTOR COUPLING MEMBER

David O. Gallusser, Oneonta; Gene L. Snyder, Bainbridge; Robert W. Brush, and Carl R. Joslyn, both of Unadilla, all of N.Y., assignors to The Bendix Corporation, Southfield, Mich.

Filed Nov. 14, 1980, Ser. No. 206,774
Int. Cl.³ H01R 13/639
U.S. Cl. 339—90 R 6 Claims



1. In combination with a coupling member of the type used for connecting together two connector housings wherein the coupling member is mounted to one of said housings, and wherein the forward connecting portion of said coupling member includes a groove on the inside thereof adapted to mate with a pin on other of said housings, the improvement wherein said coupling ring further comprises:

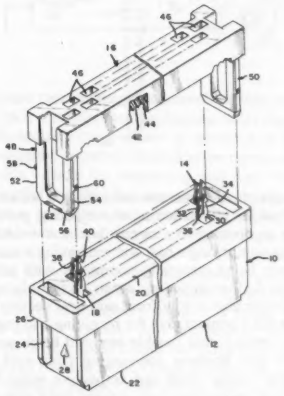
a first elongated aperture located at one end of said groove and adapted to receive the pin; and

a second elongated aperture generally parallel with said first aperture, said first and second apertures defining between then a resiliently deflectable portion.

4,359,257
MODULAR CONNECTOR FOR FLAT FLEXIBLE CABLE

Edward J. Lopinski, Dillsburg, and Kenneth R. Parmer, Harrisburg, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Continuation of Ser. No. 55,565, Jul. 9, 1979, abandoned. This application Oct. 27, 1980, Ser. No. 200,743
Int. Cl.³ H01R 13/514
U.S. Cl. 339—99 R 8 Claims



1. An improved electrical connector for terminating multiconductor flat flexible cable, said connector comprising: an elongated housing member of insulating material having oppositely directed mating and cable receiving faces, a plurality of terminal passages extending between said faces in a patterned array, an outwardly directed latching channel at each end of said housing with a strap spanning and partially enclosing each said channel at the end adjacent said cable receiving face, and a latching lug in each said latching channel spaced from said strap;

a like plurality of terminals each mounted in a respective passage in said housing member with a mating portion directed toward said mating face and an insulation piercing conductor engaging portion extending from said cable receiving face; and

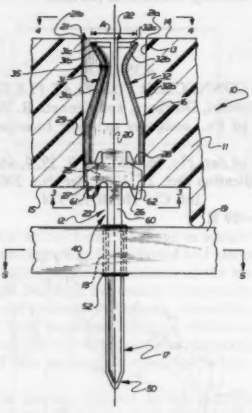
an elongated cover of insulating material having a cable engaging surface, a like plurality of apertures in said surface each aligned with a respective passage in said housing member, and a latching member depending from each end of said cover normal to said cable engaging surface and received in said latching channel each said latching member defining a central opening, means on each said latching member which engage said latching channel in a first position to hold the cable engaging surface of said cover spaced above said cable receiving face of said housing and which must be overcome to move said cover to a second position to receive said latching lugs in said openings of respective latching members to grip a cable between said cover and said housing.

4,359,258

ELECTRICAL CONNECTOR

Vincent J. Palecek, Cicero, and B. Alan Berg, Wood Dale, both of Ill., assignors to TRW Inc., Cleveland, Ohio

Filed Jan. 14, 1980, Ser. No. 111,914
Int. Cl.³ H01R 9/09
U.S. Cl. 339—176 MP **9 Claims**



1. An electrical connector comprising a socket and a solder tail, said solder tail including a projecting portion to be received in an opening in a circuit board and soldered therein, said socket comprising a base section having a central axis, said base section being integrally connected with said solder tail, said socket further including a pair of flexible opposed beam sections projecting axially from said base section and defining therebetween a contact area for receiving and engaging a male electrical contact, said flexible opposed beam sections having respective first portions converging from said base section toward said contact area and respective second portions diverging from said contact area toward distal ends which define a target area for the male electrical contact, said distal ends defining a circular target area for receiving the male electrical contact, connecting means integral with said base section and said solder tail, said connecting means including a planar neck portion disposed in a plane which includes said central axis, and a pair of locking tabs deformable angularly and in opposite directions relative to said central axis for engaging an insulator housing to retain said socket in the housing and accommodating relative radial deflection of said socket and said solder tail, said pair of locking tabs being planar and having an undeformed state in which they are in a common plane with said neck portion and are disposed on opposite sides of said central axis, said locking tabs being deformable angularly and in opposite directions out of said common plane and into angular relation with said central axis for engaging the insulator housing.

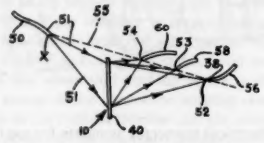
4,359,259

HOLOGRAPHIC MULTIPLEXER/DEMULTIPLEXER

Joseph L. Horner, Cambridge, and Jacques E. Ludman, Westford, both of Mass., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Apr. 29, 1980, Ser. No. 144,819
Int. Cl.³ G02B 5/32; H04B 9/00
U.S. Cl. 350—3.7 **15 Claims**

1. A multiplexer/demultiplexer comprising: a holographic element made using a single exposure of a photosensitive medium; means located substantially at a first preselected point adjacent said holographic element for directing into or receiving from said holographic element a single beam of electromagnetic radiation having a plurality of different wavelengths; and means located at a plurality of positions substantially along a line extending through said first preselected point and a second preselected point adjacent said holographic element for receiving from or directing into said holographic element a plurality of beams of electromagnetic radiation, each of said beams being at a different wavelength, wherein the relationship between said holographic element, said first preselected



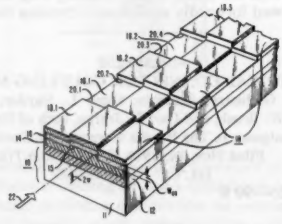
point and said second preselected point is substantially the same as the relationship between a photosensitive medium, a point source of a diverging beam of temporally and spatially coherent electromagnetic radiation impinging upon said photosensitive medium and the focus point of a converging beam of temporally and spatially coherent electromagnetic radiation impinging upon said photosensitive medium during the exposure of said photosensitive medium in making said holographic element.

4,359,260

OPTICAL POLARIZER

Franz K. Reinhart, Summit, and James C. Shelton, Berkeley Heights, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jun. 25, 1980, Ser. No. 162,815
Int. Cl.³ G02B 5/174
U.S. Cl. 350—96.12 **8 Claims**

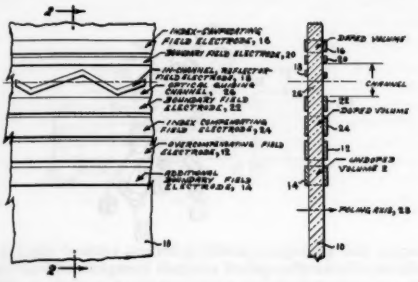


1. An optical polarizer comprising
a propagation layer (**14**) of material for carrying optical radiation (**22**) in both TE and TM modes,
a dielectric layer (**16**) on said propagation layer and having a lower optical dielectric constant than said propagation layer,
a metal layer (**18**) on said dielectric layer,
the thickness (W_{ox}) of said dielectric layer being chosen so as to increase the attenuation of said TM modes relative to said TE modes, characterized in that
said metal layer comprises a plurality of separate segments (**18.1, 18.2, 18.3**) arranged in tandem on said propagation layer so as to increase the coupling loss of said TM modes relative to said TE modes.

4,359,261
FIBER OPTIC SWITCHING DEVICE

Mark W. Levi, Utica, N.Y., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Aug. 8, 1980, Ser. No. 176,436
Int. Cl.³ G02B 5/172, 5/174
U.S. Cl. 350—96.14 6 Claims

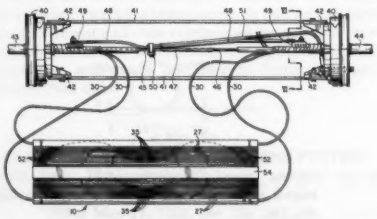


1. A switching means for multimode optical signals wherein: within a poled, transparent electro-optical crystal slab in which an optical guiding channel can be defined between two boundary regions in each of which a change of refractive index can be caused by an electric field and wherein means is provided to cause such fields and to controllably cause said fields to be removed, the provision of a doped and consequently optically absorptive volume within said slab and adjacent to one of such boundary regions and outside of said channel with means to apply an electric field to said volume so as to substantially compensate the change in refractive index of said volume caused by said doping.

4,359,262
TRAY FOR ORGANIZING OPTICAL FIBER SPLICES AND ENCLOSURES EMBODYING SUCH TRAYS

Bruce I. Dolan, Nepean, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Jun. 30, 1980, Ser. No. 164,242
Int. Cl.³ G02B 7/26
U.S. Cl. 350—96.20 27 Claims

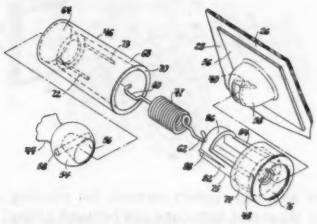


11. An enclosure for optical fiber cable splices, comprising:
two spaced apart end plates, each plate including an aperture for entry of an optical fiber cable therethrough;
a pair of spaced tie members connecting said end plates;
an elongate tray supported on said tie members, the tray having a central web and a plurality of grooves extending longitudinally on an upper surface of the web, the grooves including resilient means for holding packaged splices;
the tray including means extending from a lower surface of the web for engaging with said tie members to locate and support said tray on said tie members and means extending from an upper surface of the web for positioning a cover over the web and packaged splices.

4,359,263
ANTIGLARE REAR VIEW MIRROR ASSEMBLY

Philip B. Zeigler, Clearwater, Fla., and David W. Moore, Anderson, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Mar. 30, 1981, Ser. No. 248,716
Int. Cl.³ G02B 7/18; B60R 1/04
U.S. Cl. 350—281 3 Claims



1. An antiglare rear view mirror assembly for an automotive vehicle in which a mirror element having two reflective surfaces of different reflecting power is mounted in a retainer member; a mounting member adapted to be rigidly secured to said automotive vehicle for supporting said rear view mirror assembly; a socket member having a tubular configuration; a support member having a tubular configuration with one end thereof formed with a bearing surface for mating engagement with said mounting member and the other end thereof serving to support one end of said socket member for pivotal movement about a horizontal axis which extends transversely to the longitudinal axis of said support member; a spring extending through said support member and said socket member and having one end thereof fixed to said mounting member and the other end thereof fixed to said retainer member for connecting said retainer member to the other end of said socket member and for maintaining said mounting member in said mating engagement with said bearing surface on said one end of said support member; and detent means between said socket member and said support member coacting with said spring for holding said mirror element in a "day" position when said socket member is pivoted about said horizontal axis to present one of said reflective surfaces of said mirror element to the viewer, and in a "night" position when said socket member is pivoted about said horizontal axis to present the other of said reflective surfaces of said mirror element to the viewer.

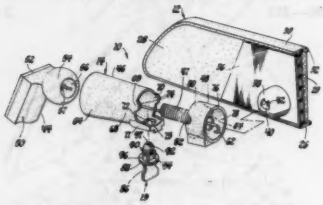
4,359,264
ANTIGLARE REAR VIEW MIRROR ASSEMBLY

Philip B. Zeigler, Clearwater, Fla., and David W. Moore, Anderson, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Mar. 30, 1981, Ser. No. 249,194
Int. Cl.³ G02B 7/18; B60R 1/04
U.S. Cl. 350—281 3 Claims

1. An antiglare rear view mirror assembly for an automotive vehicle in which a mirror element having two reflective surfaces of different reflecting power is mounted in a retainer member; a mounting member adapted to be rigidly secured to said automotive vehicle for supporting said rear view mirror assembly; a socket member having a tubular configuration; a support member having a tubular configuration with one end thereof formed with a bearing surface for mating engagement with said mounting member and the other end thereof serving to support one end of said socket member for pivotal movement about a horizontal axis which extends transversely to the

longitudinal axis of said support member; a spring extending through said support member and said socket member and having one end thereof fixed to said mounting member and the other end thereof fixed to said retainer member for connecting said retainer member to the other end of said socket member and for maintaining said mounting member in said mating engagement with said bearing surface on said one end of said support member; and a rotatable actuator between said socket



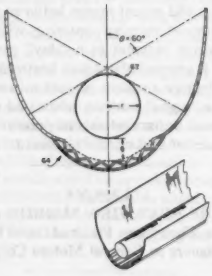
member and said support member for pivoting said socket member about said horizontal axis between a "day" position to present one of said reflective surfaces of said mirror element to the viewer, and a "night" position to present the other of said reflective surfaces of said mirror element to the viewer; said actuator having detent means coacting with said spring for maintaining said socket member in said "day" position and in said "night" position.

4,359,265

CONTROLLED DIRECTIONAL SCATTERING CAVITY FOR TUBULAR ABSORBERS

Roland Winston, Chicago, Ill., assignor to University Patents, Inc., Norwalk, Conn.

Filed Jan. 18, 1980, Ser. No. 113,155
Int. Cl.³ G02B *5/10*
U.S. Cl. 350—296 **6 Claims**



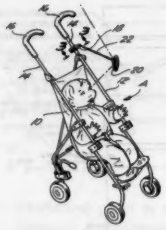
1. In combination with a tubular energy receiver, a trough-like concave cavity having an opening adapted to be oriented towards a source of radiant energy and a plurality of substantially V shaped reflecting segments arranged along the periphery of said cavity, each segment provided with an energy aperture, each said reflecting segment arranged to reflect substantially all radiant energy incident thereon towards said energy receiver; the improvement wherein the dimension of each said energy aperture is less than half the dimension of said cavity opening and each said energy aperture is placed a distance from the closest point of said receiver so that the angular subtense 2ϕ of said receiver as seen from said energy aperture is $\geqq 60°$.

4,359,266

REAR VIEW MIRROR ASSEMBLY FOR COLLAPSIBLE STROLLER

Donna Rohlf, 60 W. 68 St., New York, N.Y. 10023, and Ruben M. Lopez, Brooklyn, N.Y., assignors to Donna Rohlf, New York, N.Y.

Filed Jan. 8, 1981, Ser. No. 223,432
Int. Cl.³ B62B *9/12*; G02B *5/08*
U.S. Cl. 350—307 **6 Claims**



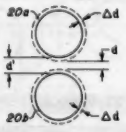
1. A collapsible stroller having a frame member and a rear view mirror assembly, said assembly comprising: bracket means for engaging said frame member; a mirror; and means for adjustably mounting said mirror to said bracket means for movement between a first position, wherein the mirror is located in view of the infant occupant, when the stroller is in use, and a second position, wherein said mirror is adjacent said frame member when the stroller is collapsed.

4,359,267

METHOD OF ASSEMBLING A GRADIENT INDEX LENS ARRAY

James J. Appel, Ontario, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jun. 25, 1980, Ser. No. 162,986
Int. Cl.³ G02B *5/17*
U.S. Cl. 350—320 **1 Claim**



1. A method of forming a gradient index lens array by joining together a plurality of gradient index optical fibers, each fiber separated from adjoining fibers by an inter-fiber spacing d', comprising the steps of:

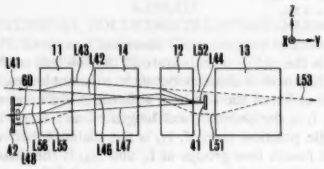
coating each of said fibers with a light absorbing material to a thickness Δd,

curing said coating to full hardness and pressing said coated fibers into a mold of said light absorbing material until each coated fiber is separated by a distance d equal to d' minus 2 Δd.

4,359,268
LIGHT QUANTITY CONTROL APPARATUS

Michikazu Kondo, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Mar. 19, 1980, Ser. No. 132,481
Claims priority, application Japan, Mar. 9, 1979, 54-27789; Mar. 12, 1979, 54-28441
Int. Cl.³ G02F 1/03, 1/29, 1/09
U.S. Cl. 350—377 2 Claims



1. Light quantity control apparatus comprising first, second and third birefringence elements having substantially parallel incident planes and emitting planes and aligned along an axis; said first birefringence element dividing incident light into two light components;

a polarization converter disposed between said first and second birefringence elements for polarizing said two light components and sending the same to the second birefringence element;

said second birefringence element separating said polarized two light components into light converted by said polarization converter and light not converted and said second birefringence element operating to synthesize first output light waves and to emit the other one of the separated light waves as second and third output light waves,

means disposed between said second and third birefringence elements for changing direction of the first output light wave emitted by said second birefringence element, said direction changing means comprising a mirror for reflecting said first output light back to said second birefringence element;

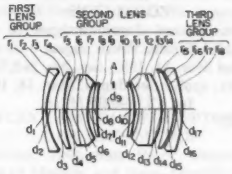
said third birefringence element operating to synthesize the second and the third light waves supplied from said second birefringence element so as to emit one output light wave, thereby controlling quantity of light derived out from said third birefringence element by said polarization converter, said apparatus further comprising means installed on the incident face of said first birefringence element, and wherein the light reflected by said mirror is divided into two light components by said second birefringence element and then synthesized by said first birefringence element after transmitting through said polarization converter, said means operating to derive out only the synthesized light.

4,359,269
VARIABLE POWER COPYING LENS SYSTEM

Takayuki Itoh, Hatoyamamura, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 11, 1981, Ser. No. 262,246
Claims priority, application Japan, May 13, 1980, 55-63055
Int. Cl.³ G02B 15/00
U.S. Cl. 350—425 2 Claims

1. A variable power copying lens system comprising, in order from the object side, a first lens group having a negative focal length, a second lens group having a positive focal length and a third lens group having a negative focal length, a distance between said first and second lens groups and a distance said second and third lens groups being variable while said lens system is moved to thereby maintain the distance between an object surface and an image surface constant, said first and third lens groups mainly functioning to maintain said distance between said object surface and said image surface constant, and movement of said second lens group mainly providing a variable power effect, said first lens group comprising, in order from the object side, a negative meniscus lens convex on the object side and a positive meniscus lens convex on the object side, said second lens group comprising substantially a lens type used in a fixed focus copying lens and said second lens having a stop diaphragm therein, said second lens comprising, in order from said stop diaphragm on the object side, a positive meniscus lens concave toward said stop diaphragm and a



cemented lens including a negative meniscus lens concave toward said stop diaphragm and a positive meniscus lens concave toward said stop diaphragm, and in order from said stop diaphragm on the image side, a positive meniscus lens concave toward said stop diaphragm and a cemented lens including a negative meniscus lens concave toward said stop diaphragm and a positive meniscus lens concave toward said stop diaphragm, said third lens group comprising, in order from the image side, a negative meniscus lens convex on the image side and a positive meniscus lens convex on the image side, said lens system satisfying:

$F = 1{:}5.7 \quad f = 245.3 \sim 256.0 \sim 248.0$
$\omega = 13.8° \sim 16.3° \sim 14.1°$
$NA = 0.053 \sim 0.044 \sim 0.036$
$m = -0.67 \sim -1 \sim -1.414$
$H_{max} = Y_{max} = 150$

lens no.	r	d	N	ν
1	107.969	4.00	1.51633	64.1
2	54.495	7.07		
3	54.739	8.00	1.51823	59.0
4	80.535	3.00		
5	51.496	9.10	1.69680	55.5
6	114.028	9.36	1.60342	38.0
7	40.394	5.00		
8	65.366	4.50	1.65160	58.6
9	121.506	30.10		
10	−149.350	4.50	1.65160	58.6
11	−74.670	5.00		
12	−42.391	11.05	1.57501	41.5
13	−136.193	9.10	1.67000	57.4
14	−56.934	3.00		
15	−97.001	8.00	1.51823	59.0
16	−54.974	3.10		
17	−54.650	4.00	1.55963	61.2
18	−114.084			

magnification variable distance	−1	−0.67	−1.414
d_4	3.00	17.997	14.174
d_{14}	3.00	17.997	14.174

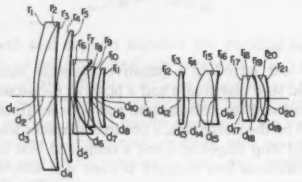
(1) $M_{max}/M_{min} = 2.11$
(2) $f_{max}/f_I = -0.335$
(3) $f_{max}/f_{III} = -0.253$
(4) $\Delta D_{I,II}/f_{max} = 0.0586$
(5) $\Delta D_{II,III}/f_{max} = 0.0586$
(6) $r_{IIP}/f_{max} = r_3/f_{max} = 0.214$
(7) $|r_{IIIP}|/f_{max} = |r_{16}|/f_{max} = 0.215$

wherein: f is an overall focal lens of said lens system, ω is a half viewing angle of a primary light ray, F is a F-number at an infinite object distance, m is a magnification factor, M_{max}/M_{min} is the variable power ratio, and NA is an aperture number defined by $NA=1/[2F(1+|m|)]$, H_{max} is a maximum height of an object, y_{max} is a maximum height of an image, r_i is a radius of curvature of an i-th lens surface, d_i is a lens thickness or a space between adjacent lenses, N is a refractive power at an α-line and ν is an Abbe number.

4,359,270
ZOOM LENS

Sadao Okudaira, Ranzan, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 11, 1981, Ser. No. 242,738
Claims priority, application Japan, Mar. 24, 1980, 55/37288
Int. Cl.³ G02B *15/16*
U.S. Cl. 350—427 **2 Claims**



1. A high performance zoom lens comprising, in order from the object side, a convergent first lens group including a cemented lens comprising a negative meniscus lens having a surface of greater curvature on the image side and a first positive meniscus lens having a surface of greater curvature on the object side and a second positive meniscus lens having a surface of greater curvature on the object side, a divergent second lens group including a negative meniscus lens having a surface of greater curvature on the image side, a biconcave lens and a positive meniscus lens having a surface of greater curvature on the object side, a convergent third lens group including a biconvex lens and a convergent fourth lens group including a cemented lens comprising a biconvex lens and biconcave lens, a cemented lens comprising a negative meniscus lens having a surface of greater curvature on the image side and a biconvex lens, and a negative meniscus lens having a surface of greater curvature on the object side, wherein each of said lens groups is independently mechanically movable for zooming, said zoom lens satisfying the following conditions:

	f = 35.97 ~ 132		F No. 1: 4.1	
	r_i	d_i	N_i	ν_i
1	115.000	1.80	1.84666	23.9
2	67.312	8.20	1.61800	63.4
3	388.000	0.10		
4	75.596	6.22	1.67000	57.3
5	325.500	l_1		
6	1370.000	1.11	1.74100	52.7
7	20.382	6.16		
8	−108.316	1.00	1.64328	47.9
9	49.832	2.39		
10	35.571	3.28	1.84666	23.9
11	126.000	l_2		
12	104.599	2.31	1.77250	49.6
13	−225.000	l_3		
14	20.500	8.07	1.54072	47.2
15	−45.300	1.21	1.80518	25.4
16	60.078	11.01		
17	56.850	2.10	1.84666	23.9
18	25.920	5.63	1.66446	35.8
19	−28.750	3.37		
20	−16.827	1.20	1.88300	40.8
21	−39.006			
overall focal length	35.97	50.00	80.00	100.00	132.00
l_1	1.47	14.79	28.04	33.34	45.64
l_2	34.35	26.72	15.52	10.41	4.34
l_3	5.80	3.35	1.08	0.39	1.59

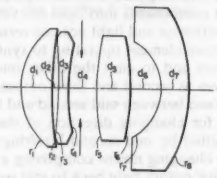
$l_{3S} = 5.80 = 5.37l_{3M}$
$f_1 = 109.39 = 3.04f_s$
$|f_2| = 27.98 = 0.78f_s$
$f_3 = 92.72 = 2.58f_s$
$f_4 = 68.38 = 1.90f_s$

where r_i is the radius of curvature of the i-th lens surface, d_i is the lens thickness or distance between adjacent lenses, N_i is the refractive index of the i-th lens, ν_i is the Abbe number of the i-th lens, f_s is the overall focal length of said zoom lens at a wide angle position thereof, l_{3s} is the distance between said third and fourth lens groups at f_s, and l_{3M} is the distance between said third and fourth lens groups at $2.22f_s$.

4,359,271
COMPACT PHOTOGRAPHIC CAMERA LENS SYSTEM HAVING A SHORT OVERALL LENGTH

Shin-ichi Mihara, Hachiouji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Oct. 16, 1980, Ser. No. 197,743
Claims priority, application Japan, Oct. 18, 1979, 54-134624
Int. Cl.³ G02B *11/22, 13/18*
U.S. Cl. 350—432 **8 Claims**



1. A compact photographic camera lens system having a short overall length comprising a first positive meniscus lens component having a convex surface on the object side, a second biconcave lens component, a third biconvex lens component and a fourth negative meniscus lens component, said lens system being so designed as to satisfy the following conditions and said fourth lens component having aspherical surfaces on both the sides defined by the following formula (7):

$$0.45f < f_{123} < 0.58f \quad (1)$$

$$0.45f < -f_4 < 0.9f \quad (2)$$

$$0.075f < d_5 < 0.12f \quad (3)$$

$$0.011f < d_2 < 0.043f \quad (4)$$

$$1.45 < n_1 < 1.63,\ 1.46 < n_4 < 1.75 \quad (5)$$

$$\nu_3 < 58.0 \quad (6)$$

$$X_i = \frac{y_i^2}{r_i + r_i\sqrt{1-(y_i/r_i)^2}} + Ay_i^6 + By_i^8 + Cy_i^8 + Dy_i^{10} \quad (7)$$

wherein the reference symbol f represents focal length of the entire lens system as a whole, the reference symbol f_{123} designates focal length of the lens group consisting of said first through third lens components as a whole, the reference symbol f_4 denotes focal length of said fourth lens component, the reference symbol d_2 represents airspace reserved between said first and second lens components, the reference symbol d_5

designates thickness of said third lens component, the reference symbols n_1 and n_4 denote refractive indices of said first and fourth lens components, the reference symbol ν_3 represents Abbe's number of said third lens component, and the reference symbols Ai, Bi, Ci and Di designate constants within the ranges defined as follows:

$A_7 > -10f^{-3}$, $B_7 > -10^3f^{-5}$, $C_7 > -10^3f^{-7}$, $D_7 > -10^4f^{-9}$;
$A_8 < -10^{-1}f^{-3}$, $B_8 < 10f^{-5}$, $C_8 < -10^2f^{-7}$,
$D_8 < -10^2f - 9$.

4,359,272

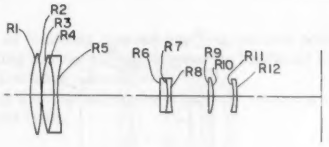
INTERNAL FOCUSING TELEPHOTO LENS

Melvyn H. Kreitzer, Cincinnati, Ohio, assignor to Balcon Industries, Inc., Brookfield, Wis.

Continuation-in-part of Ser. No. 941,515, Sep. 11, 1978, abandoned. This application Sep. 4, 1980, Ser. No. 183,999

Int. Cl.³ G02B *9/60, 13/02*

U.S. Cl. 350—455 **11 Claims**



1. A telephoto lens of fixed equivalent focal length comprising from the front end to the rear end:

a first positive group;

a second negative group comprising a doublet including a positive element and a biconcave element; and

a third positive group and a fourth negative group;

said first, third, and fourth groups being stationary in said lens;

said second group being axially movable for focusing of said lens.

4,359,273

PHOTOGRAPHING APPARATUS

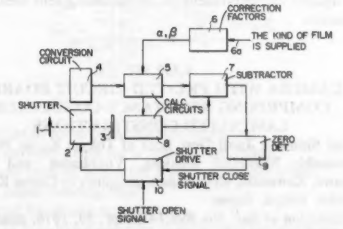
Mamoru Aihara; Yutaka Takahashi; Yoshio Nakajima, all of Hachioji, and Tsuyoshi Matsuura, Ina, all of Japan, assignors to Olympus Optical Company Ltd., Tokyo, Japan

Filed Sep. 30, 1980, Ser. No. 192,253

Claims priority, application Japan, Oct. 5, 1979, 54/128008

Int. Cl.³ G03B *7/08*

U.S. Cl. 354—23 D **13 Claims**



1. A photographing apparatus comprising a photoelectric conversion circuit including a photoelectric transducer element which continuously determines the brightness of an object being photographed for producing an output signal which corresponds to the brightness of the object, means for presetting correction factors to correct for the failure of the film reciprocity law and which depend on the film being used, means for sequentially calculating an expected exposure period on the basis of the correction factors and said output signal from the photoelectric conversion circuit, the calculating means calculating the expected exposure period during an exposure period which has been corrected for the failure of the film reciprocity law, means for determining an equivalent exposure period from the initiation of the exposure until the instant when the expected exposure period has been determined and which has been corrected for the failure of the film reciprocity law, means for sequentially deriving the remainder of the exposure period by subtracting said equivalent exposure period from the value of said expected exposure period calculated by the calculating means, and a shutter drive circuit for opening a shutter at the initiation of the exposure period and for closing the shutter at the time when the corrected remainder of the exposure period is substantially zero.

4,359,274

SINGLE REFLEX CAMERA WITH OPTOELECTRONIC DISTANCE METER

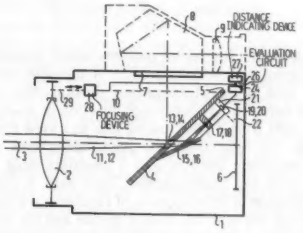
Hans-Peter Grassl, Zorneding; Peter Kleinschmidt; Heiner Herbst, both of Munich, and Hans-Jorg Pfleiderer, Zorneding, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Apr. 13, 1981, Ser. No. 253,404

Claims priority, application Fed. Rep. of Germany, May 14, 1980, 3018588

Int. Cl.³ G03B *13/18*

U.S. Cl. 354—25 **7 Claims**



1. A photographic or electronic camera with an optoelectronic distance meter, comprising:

two linear image sensors each having a plurality of sensor elements;

a lens in a path of rays from an object, and two partial aperture diaphragms for creating first and second bundles of rays corresponding to two images obtained from the object, said images being projected on the two linear image sensors;

an evaluating circuit means which in dependence upon varied position displacements of sensor signals obtained from the one image sensor with respect to sensor signals obtained from the other image sensor determines a maximum correlation between these signals and an associated position displacement with a corresponding electrical value being output;

a swinging mirror which in a first position deflects the path of rays from the lens selectively into a view finder for single reflex operation, and in a second position permits the rays to pass to an image plane for picture-taking;

said swinging mirror having two apertures which are positioned to locate the partial aperture diaphragms and permit the first and second bundles of rays to pass therethrough;

deflection element means comprising deflecting mirrors attached in a fixed position to the swinging mirror which is positioned in a path of these first and second partial bundles of rays passing through the apertures so as to project the images onto the image sensors, and said image

sensors are integrated in a doped semiconductor body which is fastened on the swinging mirror.

4,359,275

SINGLE LENS REFLEX CAMERA SYSTEM CAPABLE OF TTL FLASH OUTPUT CONTROL

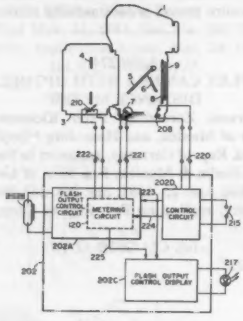
Hiroshi Hasegawa, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Dec. 11, 1980, Ser. No. 215,345

Claims priority, application Japan, Dec. 21, 1979, 54-165661; Feb. 5, 1980, 55-12680; Feb. 22, 1980, 55-20643

Int. Cl.³ G03B *15/05*

U.S. Cl. 354—33 **6 Claims**



1. In a system for taking pictures which is capable of flash photography and which includes a movable mirror device formed with a light-transmitting portion, the mirror being movable between an observation position in which the mirror reflects light from a phototaking lens to a view finder and also transmits the light from the phototaking lens through the light-transmitting portion, and a photographing position retracted from the photographing light path; a light receiving device positioned to be capable of receiving the light transmitted through the movable mirror device and the light reflected by a film surface, the light receiving device generating a photoelectric signal corresponding to the quantity of the received light; a trigger circuit for firing a flash tube in synchronization with exposure of the film surface by the light; and a flash unit having a flash output control device for controlling the quantity of light emission of the flash tube in response to the photoelectric output; the improvement comprising:

means for arbitrarily actuating said trigger circuit when said movable mirror device is in the observation position, the actuating means including means for correcting the response of said flash output control device to said photoelectric output in accordance with the difference, with respect to the same object, between the light quantity incident on said light receiving device when the movable mirror device is in the observation position and the light quantity incident on said light receiving device when the movable mirror is in the photographing position.

5. In a system for taking pictures which is capable of flash photography and which comprises a camera including a movable mirror device formed with a light-transmitting portion, the mirror being movable between an observation position in which the mirror reflects light from a phototaking lens to a view finder and also transmits the light from the phototaking lens through the light-transmitting portion and a photographing position retracted from the photographing light path, a light receiving device positioned to be capable of receiving the light transmitted through the movable mirror device and the light reflected by a film surface and generating a photoelectric output corresponding to the quantity of the received light and a metering circuit for generating an output in correspondence with said photoelectric output; and a flash unit comprising a trigger circuit for firing a flash tube in synchronization with exposure of the film surface by said light, a flash output control device for controlling the quantity of the light emission of the flash tube and means for electrically connecting the flash output control device to the camera; the improvement wherein:

said metering circuit includes means for amplifying said photoelectric output, and means having a transistor connected to the amplifying means and transmitting to said connecting means an electric current output corresponding to said photoelectric output.

4,359,276

INTERCHANGEABLE LENS BARREL

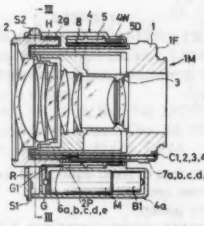
Yasumasa Tomori, Sakado, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 31, 1981, Ser. No. 298,171

Claims priority, application Japan, Sep. 10, 1980, 55-128758[U]

Int. Cl.³ G03B *3/00*

U.S. Cl. 354—195 **10 Claims**



1. An interchangeable lens barrel for an automatic focussing camera comprising focussing lens means which are screwed in a non-rotatable member of the lens barrel and which rotate about and move in the direction of the optical axis, a driving mechanism for rotating the focussing lens means in response to a drive signal from a focus detecting device of a camera body to which the lens barrel is to be mounted, said focussing lens means being capable of moving between front and rear extremities which are defined by the engagement of an abutment provided on the focussing lens means with a pair of stops which are provided on the non-rotatable member of the lens barrel and which come into contact with the abutment to limit the movement of the focussing lens means, wherein the improvement comprises brake means provided in the vicinity of the stops and engaged by the abutment to increase the resistance against the movement of the focussing lens means at the extremities.

4,359,277

CAMERA WITH PRINTED CIRCUIT BOARDS COMPRISING RESISTANCE-CONDUCTOR LAMINATED CONSTRUCTIONS

Masami Shimizu; Junji Omi, both of Tokyo; Kunio Watanabe, Kawasaki; Masanori Uchidoi, Yokohama, and Hiroshi Aizawa, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 898,147, Apr. 20, 1978, abandoned, which is a continuation of Ser. No. 795,609, May 10, 1977, abandoned. This application Jul. 23, 1980, Ser. No. 171,329

Claims priority, application Japan, May 24, 1976, 51-59894; May 24, 1976, 51-59895; Jul. 7, 1976, 51-80540; Feb. 1, 1977, 52-10013

Int. Cl.³ G03B *17/00*; **H01C** *10/16, 1/012*; **H05K** *1/12*

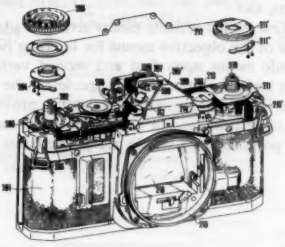
U.S. Cl. 354—219 **21 Claims**

8. In a method of making an electrical circuit arrangement which has an even surface, comprising the steps of:

providing a circuit board which comprises an insulating

baseboard resistor layer deposited on the baseboard and conductor layer deposited on the resistor layer;

forming a concave portion by removing the unnecessary portion of the laminated combination of the conductor layer and resistor layer; and



filling an insulating material into said concave portion and making an even surface between the conductor layer and the insulating material; and

forming a circuit pattern by selectively removing the conductor layer.

4,359,278

TRIAXIAL FOCAL PLANE SHUTTER

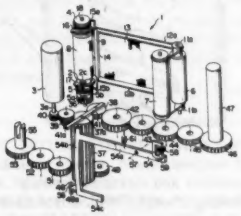
Akihiko Hashimoto, Hachioji, Japan, assignor to Olympus Optical Company, Ltd., Japan

Filed Oct. 29, 1981, Ser. No. 316,525

Claims priority, application Japan, Dec. 2, 1980, 55-170757; Dec. 2, 1980, 55-170758

Int. Cl.³ G03B *9/32*

U.S. Cl. 354—244 **7 Claims**



1. A triaxial focal plane shutter including:

a first take-up drum for a first shutter blind;

a second take-up drum for a second shutter blind;

a first blind winding shaft;

a second blind winding drum;

a pair of first blind winding pulleys, said second blind winding drum being rotatably supported by a pair of support members disposed above and below it;

said first blind winding pulleys being mounted on an upper and a lower end of said first blind winding shaft which extends through both said second blind winding drum and said pair of support members to points above and below said support members such that said first blind winding pulleys are rotatable independently of said second blind winding drum.

4,359,279

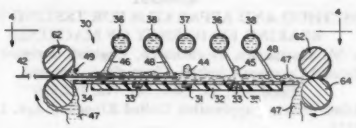
PHOTOGRAPHIC PROCESSING APPARATUS WITH LIQUID APPLICATION TO BOTH SIDES OF THE PHOTOGRAPHIC MATERIAL

Andrew Popoff, Mountain Lakes, N.J., assignor to Keuffel & Esser Company, Morristown, N.J.

Filed Sep. 21, 1981, Ser. No. 303,797

Int. Cl.³ G03D *3/02*

U.S. Cl. 354—320 **3 Claims**



1. Photographic processing apparatus comprising:

(a) a reservoir for containing a supply of processing liquid;

(b) transport means situated above said reservoir and defining a substantially horizontal path of travel of sheet material in said apparatus, said transport means comprising:

(1) a flat, horizontally-disposed plate extending along said sheet travel path,

(2) two pairs of superposed rollers extending transversely across said sheet travel path and situated adjacent to the respective proximal and distal ends of said plate, the nips of said roller pairs lying in a plane substantially parallel to the upper surface of said plate,

(3) means for driving said rollers; and

(4) liquid conduit means comprising a plurality of outlet ports terminating at said plate upper surface, said ports being arrayed transversely across said sheet travel path;

(c) processing liquid application means situated above said transport means plate and comprising liquid conduit means having a plurality of outlet ports arrayed transversely across said sheet travel path in at least two lines and positioned such that the ports of one line alternate transversely with those of the other line, and being spaced in said arrays such that the cumulative impingement pattern of liquid flow from said ports extends uninterrupted across said sheet travel path; and

(d) means for circulating processing liquid from said reservoir simultaneously through said transport and application liquid conduit means, said liquid returning by gravity flow to said reservoir.

4,359,280

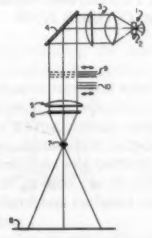
PROCESS AND SYSTEM FOR VARIABLE CONTRAST COLOR PHOTOGRAPHIC IMAGING

Peter Krause, 50 Cedar Dr., Allendale, N.J. 07401

Filed Jul. 28, 1980, Ser. No. 172,507

Int. Cl.³ G03B *27/73*

U.S. Cl. 355—37 **14 Claims**



1. In a color photographic printing system wherein blue, green and red light of desired relative intensities is radiated on

corresponding yellow, magenta and cyan dyes to obtain a color balanced dye image and including means for selecting a desired contrast for the dye image, the improvement wherein the means for selecting a desired contrast for the dye image comprises means for modulating the wavelength range and the wavelength of the peak transmittances of the blue, green and red light while maintaining their relative intensities with respect to the dyes.

4,359,281

METHOD AND APPARATUS FOR TESTING THE BRAKING EFFICIENCY OF MACHINES

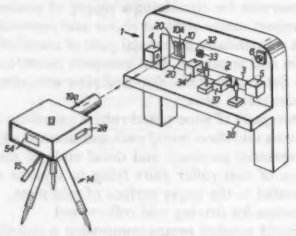
John M. Humphries, Hornchurch, England, assignor to The Marconi Company Limited, Chelmsford, England

Filed Apr. 22, 1980, Ser. No. 142,830

Claims priority, application United Kingdom, Apr. 11, 1979, 7912731

Int. Cl.³ G01L *5/28;* G01B *11/14*

U.S. Cl. 356—373 **6 Claims**



1. A method of testing the braking effectiveness of a machine having a first part and a second part which moves relative to said first part, said second part including a member affixed thereto having a surface carrying a pattern of spaced reflective bars and edge markings, comprising the steps of:

focusing a rectangular image with castellated edges onto the surface of said memeber by means of an optical system;

adjusting said optical system to align said castellated edges of said rectangular image with said edge markings of said pattern;

focusing reflected light from said pattern onto a photodetector by means of said optical system; and

utilizing a signal at the output of said photodetector to determine the amount of time it takes after braking has been applied to said second part for said second part to come to a halt or to reach a predetermined velocity relative to said first part.

4,359,282

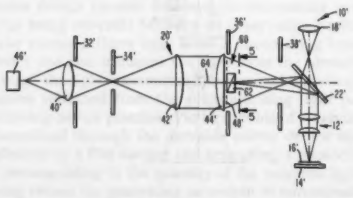
OPTICAL MEASURING METHOD AND APPARATUS

Marvin C. Garrison, San Carlos, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Nov. 17, 1980, Ser. No. 207,168

Int. Cl.³ G01B *11/24*

U.S. Cl. 356—376 **16 Claims**



1. An optical gauge for determining if vertical surface dimensions of a specimen are within predetermined limits, comprising

an objective means,

mounting means supported relative to the objective means for mounting the specimen,

means for viewing the specimen through the objective means, and

three-dimensional reticule means arranged adjacent a focal plane of the objective means for focusing portions of the reticule means upon first and second vertically spaced apart surface portions of the specimen, the three-dimensional reticule means being adapted to provide an indication of vertical spacing between the first and second surface portions being within acceptable limits.

4,359,283

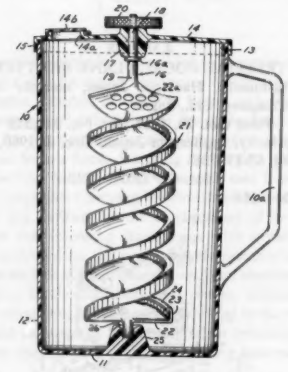
JUICE CONTAINER AND STIRRER

Thomas A. McClellan, Windsor, Canada, assignor to Sperry Corporation, Troy, Mich.

Filed Apr. 29, 1981, Ser. No. 258,622

Int. Cl.³ B01F *7/24*

U.S. Cl. 366—247 **15 Claims**



1. A juice container and stirrer comprising

a container having a bottom wall, side wall and open upper end,

a removable cover for the open end,

a shaft,

means for rotatably supporting the shaft on the cover such that a portion of the shaft extends exteriorly of the container and another portion of the shaft extends internally substantially throughout the height of the container,

handle means on the outer end portion of the shaft for gripping and rotating the shaft,

helical vane means extending radially outwardly along the length of the shaft extending within the container,

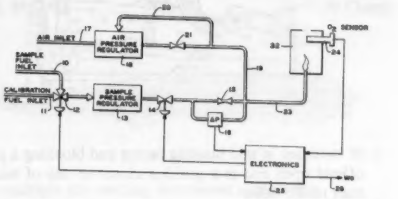
said helical vane means having a cross section which includes a radially extending portion and an axially extending peripheral wall portion adjacent the periphery of the radially extending portion and toward the cover,

said vane means including a flange portion extending radially inwardly from the peripheral wall portion.

4,359,284
METHOD AND APPARATUS FOR DETERMINING THE WOBBE INDEX OF GASEOUS FUELS

William B. Kude, Plymouth, and A. Noel J. Pearman, St. Paul, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Mar. 17, 1981, Ser. No. 244,539
Int. Cl.[3] G01N *25/22*
U.S. Cl. 374—37 14 Claims



1. Apparatus for determining the Wobbe Index of gaseous fuels comprising:

means for supplying a gaseous fuel sample and a substantially constant amount of air to provide a combustible mixture thereof;

means for determining the pressure differential of a flowmeter through which said fuel constituent of said mixture is caused to flow;

burner means for the combustion of said mixture;

means for sensing the presence of combustibles or oxygen in the products of combustion of said mixture, wherein said sensing means is one exhibiting a rapid change in output signal about a particular combustion product composition wherein said output is quantitatively indicative of a certain relative amount of said combustibles or oxygen in said products of combustion;

means for adjusting the relative amount of fuel in said mixture in response to the output of said sensing means until said sensing means indicates that said products of combustion contain said certain relative amount of said combustibles or oxygen;

means for determining the Wobbe Index of said fuel from a known relationship between the heating value of the fuel constituents and the amount of oxygen required for the combustion thereof at said particular combustion product composition and the pressure differential across said fuel flowmeter means.

4,359,285
TEMPERATURE MEASUREMENT SYSTEM

Ralph G. Washburn, Marion, Mass., assignor to The Sippican Corporation, Marion, Mass.

Filed Apr. 16, 1980, Ser. No. 140,800
Int. Cl.[3] G01D *3/04;* G01K *1/20*
U.S. Cl. 374—172 12 Claims

1. A system for remote measurement of a physical parameter comprising:

a measuring station,

a portable probe adapted to be deployed remotely from said measuring station,

a power circuit connected between said probe and said measuring station,

a detection circuit connected between said measuring station and said probe,

said power circuit and said detection circuit having at least one wire at least 2500 feet long connecting said probe to said measuring station,

said measuring station having

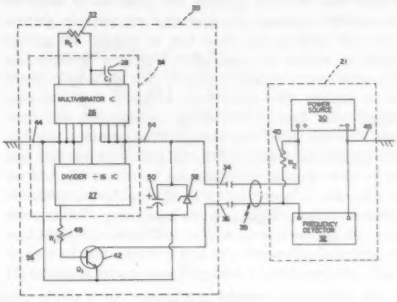
a power source connected in said power circuit and in said detection circuit, and

detecting means connected in said detection circuit for determining whether said detection circuit is open or closed,

said probe having

an element for sensing said parameter,

a variable frequency oscillator connectod to said power circuit and to said element to provide an alternating current output at a frequency dependent upon the condition of said element, and

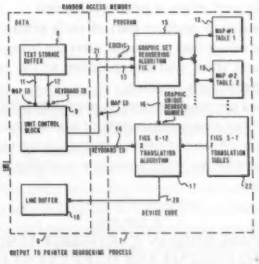


switch means connected in said detection circuit and to said oscillator to open and close at a rate dependent upon said frequency so that said parameter can be effectively measured at said measuring station without transmission of said alternating current output over said detection circuit.

4,359,286
CHARACTER SET EXPANSION

Johnny G. Barnes, and Paul D. Waldo, both of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 20, 1980, Ser. No. 208,748
Int. Cl.[3] B41J *5/30;* G06K *9/70*
U.S. Cl. 400—70 8 Claims



1. A system for reducing the number of print element changes normally required by a printer in printing characters from different character sets, said system comprising:

(a) means for determining whether a character to be printed is included on a print element on said printer;

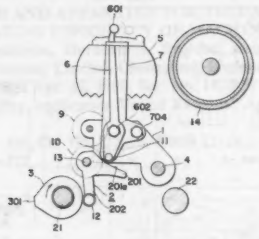
(b) means, if said character to be printed is not included on said print element on said printer, for determining if said character to be printed can be constructed by printing a plurality of characters included on said print element on said printer; and

(c) means for causing printing of said character to be printed if either said character (1) is included on said print element on said printer, or (2) can be constructed from said plurality of characters on said print element on said printer.

4,359,287
IMPRESSION CONTROL MECHANISM FOR A TYPEWRITER

Tetsuma Asahi, Kodaira, Japan, assignor to Silver Seiko, Ltd., Tokyo, Japan

Filed Apr. 11, 1980, Ser. No. 139,477
Claims priority, application Japan, Apr. 17, 1979, 54-051218[U]
Int. Cl.³ B41J *1/32*
U.S. Cl. 400—166 6 Claims



1. An impression control mechanism for a single element typewriter, comprising:

a platen;

a single printing element;

means mounting said printing element for movement from a fixed rest position towards said platen;

means for defining said fixed rest position of said element;

means for urging said element towards said rest position;

cyclically operable print drive means operable in a particular part of each print cycle for driving said printing element to move towards said platen until a predetermined position is reached whereafter said printing element moves by its own inertia;

manually adjustable impression control means for selectively defining an intermediate position of said printing element between said rest position and said predetermined position to thereby define a distance over which said printing element is driven by said print drive means within said particular part of each print cycle; and

means operable in another part of each print cycle immediately preceding said particular part for bringing said printing element from said rest position to the selectively defined intermediate position;

wherein said printing element is normally positioned at said fixed rest position independent of said manually adjustable impression control means to thereby provide an operator of the typewriter with optimum visibility of the printed characters.

4,359,288
SINGLE PASS RIBBON CARTRIDGE FOR IMPACT PRINTERS HAVING MEANS TO PREVENT INCORRECT INSERTION

Robert L. Bullock, Georgetown, Billy D. Purcell, Austin, William J. Thornhill, Austin, and Edward E. Toutant, Austin, all of Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

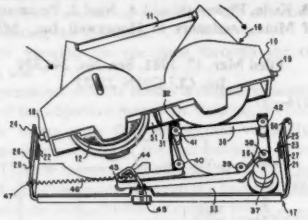
Filed Jun. 16, 1980, Ser. No. 159,555
Int. Cl.³ B41J *33/14*
U.S. Cl. 400—208 11 Claims

1. A ribbon cartridge containing a ribbon for an impact printer comprising

a cartridge housing,

first and second reels rotatably mounted in said housing, each reel supporting a portion of an inventory of a ribbon web running in a path along one end of said cartridge housing from said first to said second reel,

said cartridge housing having an open end opposite said one end, and

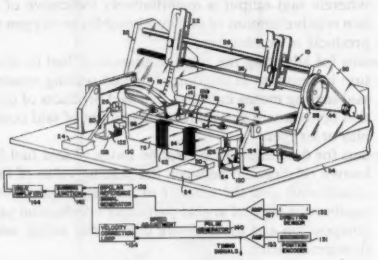


a rib mounted in said housing facing and blocking a portion of said open end in a position closer to one of said reels than to the other.

4,359,289
COUNTERBALANCED BIDIRECTIONAL SHUTTLE DRIVE HAVING LINEAR MOTOR

Gordon B. Barrus, El Segundo, and Jerry Matula, Westminster, both of Calif., assignors to Printronix, Inc., Irvine, Calif.

Filed Nov. 20, 1979, Ser. No. 96,025
Int. Cl.³ B41J *19/00*
U.S. Cl. 400—322 23 Claims



1. An arrangement for bidirectionally driving a hammer bank shuttle assembly along a linear path comprising the combination of:

a pair of opposite rotatable elements;

a first elongated element forming a hammer bank shuttle assembly mounting element and extending between and disposed adjacent each of the pair of opposite rotatable elements on one side of the rotatable elements;

a second elongated element forming a counterbalancing element and extending between and disposed adjacent each of the pair of opposite rotatable elements on the opposite side of the rotatable elements from said one side;

means including at least one pole piece disposed adjacent one of the first and second elongated elements for providing a flow of magnetic flux between the pole piece and said one of the first and second elongated elements;

a coil mounted on said one of the first and second elongated elements adjacent the pole piece; and

means for providing to the coil a cyclically varying signal to reciprocate said one of the first and second elongated elements in opposite directions through a path of linear movement.

4,359,290
WRITING INSTRUMENT

Tomozo Sekiguchi, Kawaguchi, and Kazuma Noguchi, Tokyo, both of Japan, assignors to Pentel Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 2, 1980, Ser. No. 155,088

Claims priority, application Japan, Jun. 18, 1979, 54-83155[U]; Aug. 27, 1979, 54-117710[U]; Aug. 27, 1979, 54-117711[U]; Feb. 27, 1980, 55-24529[U]

Int. Cl.³ B43K *23/01, 27/00*

U.S. Cl. 401—32 **20 Claims**

1. A multiple slot writing instrument comprising:

a cylindrical body having in an internal surface thereof a plurality of longitudinally extending slots for containing a plurality of writing instruments;

a guide tube fitted within said cylindrical body for rotation and axial movement relative thereto, said guide tube having therethrough a single longitudinally extending opening adapted to be aligned with a selected one of said slots upon rotation of said guide tube with respect to said cylindrical body, whereby a respective writing implement is transferrable through said opening between said selected slot and the interior of said guide tube;

chuck means positioned at a front end of said guide tube for gripping a writing implement within said guide tube;

a cover plate positioned adjacent said opening in said guide tube, said cover plate being tiltably movable between a blocking first position blocking said opening and an unblocking second position unblocking said opening;

cap means mounted on a rear end of said cylindrical body for moving said guide tube and said cover plate axially with respect to said cylindrical body from a closed first position toward a released second position; and

means for, upon axial movement of said guide tube and cover plate from said first closed position thereof toward said released second position thereof, tilting said cover plate from said blocking first position thereof to said unblocking second position thereof, said tilting means comprising a projecting member rotatably mounted to a rear portion of said cylindrical body, said projecting member having a projection extending inwardly through said opening, and engagement means in the form of a depressed portion in said cover plate at a position such that said projection engages said depressed portion when said guide tube and cover plate are in said first closed position thereof and engages an undepressed portion of said cover plate when said guide tube and cover plate are moved toward said released second position thereof.

4,359,291
MULTICOLOR PEN

Victor Lum, 17 Pollard St., North Billerica, Mass. 02173

Continuation of Ser. No. 813,442, Jul. 7, 1977, abandoned. This application Jan. 18, 1980, Ser. No. 113,299

Int. Cl.³ B43K *27/08*

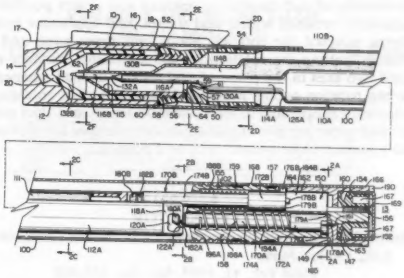
U.S. Cl. 401—33 **18 Claims**

1. A writing apparatus comprising:

an elongated hollow body having an elongated body axis and including (1) an exit opening coaxial with said body axis and disposed at one end of said body, and (2) a writing portion coaxial with said body axis and tapering down to said exit opening, said writing portion including (a) an outer surface substantially continuous with the outer surface of said body and terminating in a coaxial external step normal to said body axis and, (b) a shroud coaxially extending from said step and terminating in said exit opening;

a plurality of elongated writing elements disposed in said body each including a writing point and an opposite end spaced from said point, non-selected ones of said writing elements being uniformly positioned radially around said body axis;

means for successively displacing the writing elements lengthwise along said body such that the displacement is effective to advance the writing point of said selected writing element through said exit opening without contacting the interior of said body and to align the axis of said element with said body axis, said means for successively displacing the writing elements comprising (1) a selection unit coaxially positioned with respect to said body axis and terminating the end of said body opposite said exit opening, said selection unit being rotatable about said axis and including (a) a substantially continuous outer surface, (b) actuating means for displacing each of said elements movable through a succession of selection stations radially positioned about said axis, and (c) a peripheral edge, (2) conversion means for converting the rotary motion of said selection unit into linear displacement, and (3) coupling means coupling each of said opposite ends of



said writing elements to said conversion means for selectively transmitting a linear thrust to each of said writing elements while permitting pivotal motion and limited lateral motion thereof;

means for sealing said hollow body; and

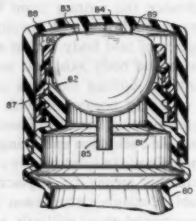
a substantially cylindrical instrument cap closed at one end and being adapted to be removably mounted alternatively on each of said writing portion and said selection unit, said instrument cap including an outer envelope adapted to make frictional contact at its open end with said cylindrical outer surface of said selection unit, a cap liner secured within said outer envelope and terminating in an internal coaxial shoulder, said internal shoulder being adapted to abut alternatively said external step and said upper peripheral edge in accordance with the position of said instrument cap on said writing portion or on said selection unit respectively;

wherein said internal shoulder of said cap liner and the peripheral edge of said selection unit each includes means for coupling said instrument cap to said selection unit so that said instrument cap is adapted to transmit rotary motion about said body axis to said selection unit when said instrument cap is mounted on said selection unit and said instrument cap is rotated in one direction.

4,359,292
COSMETIC DISPENSER

Harold R. Thompson, Duxbury, and Ernest H. Duval, Winthrop, both of Mass., assignors to The Gillette Company, Boston, Mass.

Continuation of Ser. No. 29,603, Apr. 13, 1979, abandoned. This application Dec. 29, 1980, Ser. No. 220,600
Int. Cl.³ B43K 7/10
U.S. Cl. 401—215 17 Claims

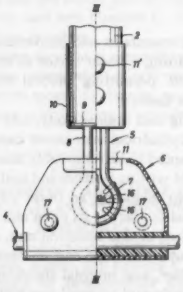


1. A cosmetic dispenser comprising a socket having a dispensing opening and three orthogonal axes, one axis extending through said socket and the other two of said axes lying substantially in the plane of said socket; an applicator member retained in said socket and having an upper portion extending exteriorly of said dispensing opening and a skirt portion substantially retained within said socket, said applicator member being adapted for rotation about said three axes; and stop means limiting the rotation of said applicator member about said two axes in the plane of said socket, in such manner that when rotation occurs about said axes of limited rotation, the dispenser is operable to feed cosmetic across said skirt portion to said upper portion of said applicator member for application to a surface to be treated with said cosmetic.

4,359,293
CONNECTOR

Ichiro Miyoshi, Kobe, Japan, assignor to Duskin Franchise Co., Ltd., Osaka, Japan

Filed Feb. 11, 1981, Ser. No. 233,453
Int. Cl.³ F16D 3/00
U.S. Cl. 403—58 5 Claims

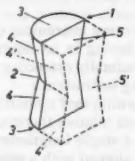


1. A connector for detachably and rotatably connecting one article to another article, which comprises an insert member to be attached to said one article and a receiving member having a space for insertion of said insert member, which is to be attached to said another member, wherein said insert member has an engaging annular peripheral portion having a void or hollow at the center thereof, a pair of spherical projections capable of elastic and reversional deformation are arranged in the insertion space of the receiving member to confront each other, and such a dimensional relation is established between the engaging annular peripheral portion and the spherical projections that the distance between apexes of the spherical projections is smaller than the thickness of the engaging annular peripheral portion and when said insert member is inserted into the receiving member, the engaging annular peripheral portion is rotatably gripped and supported by the peripheral parts of the paired spherical projections.

4,359,294
ASSEMBLING PLUG

Jan O. Crillesen, Graested, Denmark, assignor to Ole Leth, Aarhus, Denmark

Filed Nov. 26, 1980, Ser. No. 210,567
Claims priority, application Denmark, Nov. 27, 1979, 5037/79
Int. Cl.³ B25G 3/00
U.S. Cl. 403—406 6 Claims

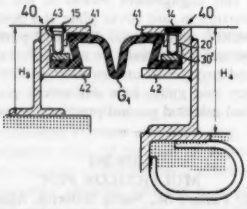


1. An assembly plug for sectional furniture, shelves and the like, wherein the end of one board is assembled with the edge of another board, said plug comprising a body with a central portion, two end faces, and a longitudinal axis extending from one end face to the other, the cross sectional area of said body, taken perpendicular to said longitudinal axis, increasing from said central portion toward said end faces, said body also being provided with a planar surface extending parallel to said longitudinal axis and from one end face to the other.

4,359,295
EXPANSION JOINT MEMBER

Heinz Honegger, Wil, and Franz Bauer, Winkel, both of Switzerland, assignors to Honel Holding AG, Ltd. SA, Switzerland

Filed Dec. 24, 1980, Ser. No. 220,117
Int. Cl.³ E01C 11/04
U.S. Cl. 404—68 5 Claims



1. A device for spanning expansion gaps in bridge decks or roadways of the type having a base coarse and a wearing coarse wherein the upper edge of said device is flush with the surface of said wearing coarse and defines its edge on each side of said gap, said device comprising: opposing metal edge channel members (10, 40) having a substantially U-shaped cross section which is open toward the expansion gap having upper (11, 41) and lower (12, 42) flanges extending into said gap, the upper surface of said upper flanges flush with said surface of said wearing coarse and said upper flanges having spaced threaded through holes (13, 43), said channel members being

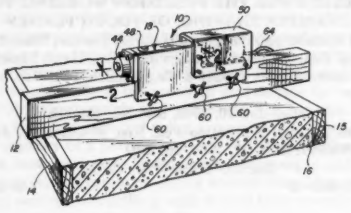
anchored to said base coarse; an elongate elastomeric member (G, G_1) extending across said gap and into said channel members, said elastomeric member having a substantially flat edge portion on each side, said flat edge portion having its lower surface in contact with the upper surface of said lower flanges of said channel members; substantially flat restraining bars (30, 30') disposed between said upper flanges of said channel members and said elastomeric member; and screw means (20, 20') threadedly engaged from above through said threaded through holes and engaging the top of said restraining bars to clamp said flat edge portions of said elongate elastomeric member between the upper surface of said lower flanges of said channel members and said restraining bars.

4,359,296

VIBRATOR FOR SCREED BOARDS

Daniel R. Cronkhite, Box 162B, R. R. 4, Danville, Ill. 61832

Filed Feb. 6, 1981, Ser. No. 232,226
Int. Cl.³ E01C *19/38*
U.S. Cl. 404—114 **10 Claims**



1. A portable, lightweight vibrator adapted to be easily and quickly removably secured to a screed board for vibrating the screed board comprising:

a generally U-shaped integrally formed housing having a top wall and a pair of side walls, a bottom wall longer in length than said top and pair of side walls, and a pair of depending walls below said bottom wall and extending the length thereof, said bottom wall being disposed between said top and pair of side walls and providing a cavity for receiving therein a vibration element, said pair of depending walls forming a channel for receiving therein a screed board to which said vibrator is to be removably secured; means carried by said depending walls for clamping said vibrator to a screed board disposed with said channel; said vibration element comprising an unbalanced rotating element disposed and rotatably supported within said cavity; a source of power for rotatably driving said vibration element secured to said bottom wall and coupled to said vibration element; and a generally U-shaped cover disposed about said source of power and secured to said housing.

4,359,297

DIKE IRRIGATION

Carl E. Butler, P.O. Box 116, Anton, Tex. 79613

Filed Oct. 9, 1980, Ser. No. 195,663
Int. Cl.³ E02B *13/00*
U.S. Cl. 405—36 **14 Claims**

1. In an agricultural irrigation system for irrigating cultivated land having:

a. an elongated pipe carrying water therein,

b. a plurality of vehicles supporting said elongated pipe with water therein a set distance above the land to be watered,

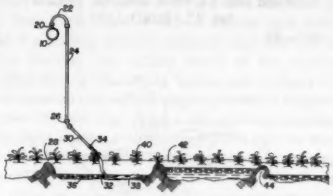
c. move means attached to the vehicles for moving the pipe with water therein over the land, and

d. supply means attached to the pipe for supplying water to the pipe as it moves,

wherein the improved structure comprises:

e. rigid drop pipes extending down from the elongated pipe, and

f. a flexible drop hose attached to each of the drop pipes,



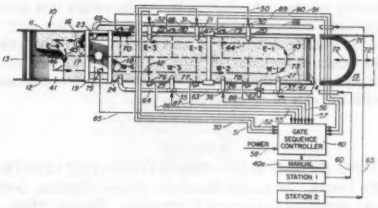
g. the length of the drop pipe and hose such that the drop pipe is above the land and the hose drags on the land being watered.

4,359,298

METHOD AND APPARATUS FOR THE FILLING OF A SLURRY SUMP

Frederick A. Webb, Fairmont, and Richard E. Doerr, Morgantown, both of W. Va., assignors to Conoco Inc., Ponca City, Okla.

Filed Jan. 6, 1981, Ser. No. 222,838
Int. Cl.³ B65G *53/30*
U.S. Cl. 406—3 **12 Claims**



1. Method for filling an elongated sump having first and second side walls, ends and a bottom, said sump adapted for filling with a slurry of water and mineral and having a plurality of spaced slurry inlets along each of said side walls and a dredge mounted for movement along the length of said sump and positioned to traverse the length along one side wall, rotate to a location adjacent said remaining side wall, traverse said length of said remaining side wall and rotate to the original position, an improvement in adding slurry to said sump comprising:

(a) dividing said sump into a plurality of adjacent zones along said first side wall;

(b) dividing said sump into a second plurality of zones along said second side wall;

(c) adding slurry in each of said first zones in sequential order in a direction related to the direction of movement of said dredge adjacent said first side wall;

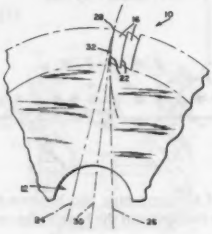
(d) adding slurry in each of said second zones in sequential order in a direction related to the direction of movement of said dredge when it is moving adjacent said second side wall;

(e) sequencing the addition of slurry into any of said first or second zones when said individual zone is occupied by said dredge by adding slurry to the zone adjacent said occupied zone which adjacent zone was just previously occupied by said dredge.

4,359,299
MILLING CUTTER

John Sagarian, Auburn, Mass., assignor to Ilco Unican Corp., Rocky Mount, N.C.

Filed Sep. 11, 1980, Ser. No. 186,281
Int. Cl.³ B26D 1/00
U.S. Cl. 407—55 2 Claims



1. A rotary cutting tool for cutting V-shaped notches in key blanks, characterized by:

A. circumferentially spaced peripheral teeth on the tool adapted to form the bottoms of notches in a key blank;

B. circumferentially spaced side cutting teeth on opposite sides of the tool at the peripheral portion thereof;

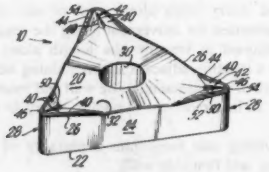
C. the cutting edges of the cutting teeth at the opposite sides of the tool being in outwardly convergent relation to one another, toward and to said peripheral teeth so as to be cooperable therewith in the cutting of substantially V-shaped notches in a key blank;

D. and the cutting edges of the teeth at one side of the tool having substantially slight convex curvature that changes gradually but continuously from a substantially zero rare at the outer extremities of said teeth to a positive rake at the inner extremities of said teeth, said convex cutting edges lying on the surface of a cone which is concentric with the axis of rotation of the tool.

4,359,300
CUTTING INSERT WITH IMPROVED CHIP CONTROL

Jayanta Hazra, Troy, and Sazzadul Haque, Pontiac, both of Mich., assignors to General Electric Co., Detroit, Mich.

Filed Dec. 29, 1980, Ser. No. 221,006
Int. Cl.³ B26D 1/00
U.S. Cl. 407—114 10 Claims



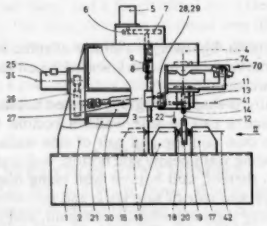
1. A cutting insert for use with an indexable cutting tool comprising:

a flat wafer of cutting material of generally polygonal plan form, having a pair of opposed faces and a plurality of upstanding side walls extending therebetween with the juncture between each said side wall and a face defining a peripheral cutting edge, said polygonal wafer further including a plurality of radiused corner portions with at least one of said insert faces being nonplanar with the corner portions thereof sloping inwardly towards the opposed face to a central surface on said nonplanar face, each of said corner portions of said nonplanar face including a pair of abutting, generally triangular chip groove portions and a raised central triangular land area disposed between each pair of abutting chip groove portions, each chip groove portions being spaced from the adjacent cutting edge of the insert so as to define a side land area, each said central land area including a pair of side edges and a vertex, with an imaginary line bisecting said vertex being disposed substantially normal to the radiused corner portion associated therewith, and with said side edges of each said triangular land area being disposed at an angle relative to the adjacent cutting edges of the insert such that the width of each said chip groove portion increases from its end adjacent its respective corner portion to its opposed end, and with the depth of each chip groove portion increasing from its end adjacent its respective corner portion to its opposed end whereby said insert may be utilized to machine cuts through a range of feed rates while simultaneously reducing cutting forces.

4,359,301
MACHINE FOR THE PRECISION WORKING, FOR EXAMPLE SHAVING, OF TOOTH FLANKS

Johann Spensberger, Poing, and Heinrich Fischer, Munich, both of Fed. Rep. of Germany, assignors to Carl Hurth Maschinen- und Zahnradfabrik GmbH & Co., Munich, Fed. Rep. of Germany

Filed Jul. 10, 1980, Ser. No. 168,218
Claims priority, application Fed. Rep. of Germany, Jul. 31, 1979, 2930997; Mar. 27, 1980, 3011802
Int. Cl.³ B23F 9/02, 19/06
U.S. Cl. 409—3 16 Claims



1. A machine for precision working of tooth flanks on a toothed workpiece rotatably supported in a machine frame, comprising

frame means;

adjusting carriage means and swivel plate means for pivotally suspending said adjusting carriage means from said frame means and for movement about a first axis, said adjusting carriage means including a guide carrier suspended from said swivel plate means, a feed carriage movably mounted on said guide carrier, and a tool rotatably mounted on said feed carriage, the movement of said feed carriage effecting a movement of said tool across the width of said workpiece;

first control means for effecting a smooth and continuously varying tilting of said feed carriage, said guide carriage and the axis of rotation of said tool in a plane about an axis perpendicular to said plane in response to a movement of said feed carriage and said tool thereon across the width of said workpiece; and

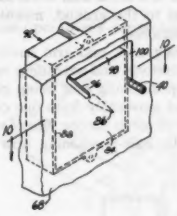
second control means for smoothly and continuously cancelling a portion of the movement of said tool toward said workpiece occurring over a selected segment on opposite sides of a central position of said tilting movement of said tool whereby a smooth and continuously varying crowned surface is produced on said teeth of said workpiece.

4,359,302

METHOD FOR CUTTING WALLBOARDS

Bryan Payne, 3265 Nocturne Rd., Venice, Fla. 33595

Filed Nov. 28, 1979, Ser. No. 98,212
Int. Cl.[3] B23C *1/20*; B27C *1/00*; G04B *5/14*
U.S. Cl. 409—84 2 Claims



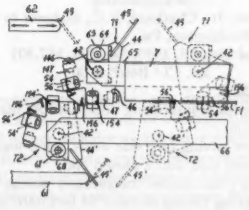
1. A method for locating a utility box having an opening disposed behind an installed wallboard and for cutting off a portion of said wallboard covering the opening of said utility box, said method comprising placing in said utility box a locator and cut-out template member having a surface substantially flush with said utility box opening and a prong member disposed substantially at the center of said surface for indicating by projection through said wallboard the location of said utility box, said surface having a peripheral groove defining the periphery of a portion to be cut out from said wallboard, and at least one groove leading from said prong to said peripheral groove, said prong providing an indication of the location of said one groove, drilling with a hand tool provided with a rotary cutter through said wallboard proximate the projection of said prong through said wallboard for projecting the tip of said cutter into said one groove, effecting a cut in said wallboard with the tip of the cutter of said hand tool projecting within and being guided by said one groove until said peripheral groove is reached, effecting a closed cut in said wallboard with the tip of said cutter projecting within and being guided by said peripheral groove, removing the portion cut out from said wallboard, and removing said locator and cut-out template member from said utility box.

4,359,303

PLATE-EDGE MACHINING APPARATUS

Giorgio Bragaglia, 5, Via Pablo Neruda, Bologna, Italy

Filed Feb. 26, 1980, Ser. No. 124,762
Int. Cl.[3] B23D *1/8, 1/26, 13/02*
U.S. Cl. 409—303 5 Claims



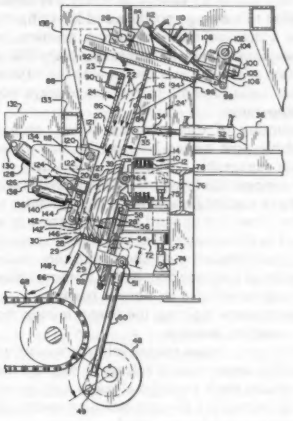
1. Plate edge machining apparatus, comprising means for supporting a metal plate to be machined; alignment stop means operatively connected to the support means, said stop means being movable into a position spaced from the support means for positioning a plate border of the metal plate into a machining position spaced from the support means; a plate holder movably mounted above the support means for pressing the metal plate against the support means in an area adjacent the plate border; a fixed sliding guide extending substantially parallel to the stop means; a tool carriage being reciprocable along the sliding guide; a pair of tool heads each carried by the tool carriage and respectively associated with upper and lower plate border edges to be machined, each tool head including a tool carrier having a pair of cutting plates mounted in spaced relation from each other, a pair of rollers each respectively mounted in a leading position adjacent each one of the cutting plates for limiting the cutting depth of the corresponding cutting plate during the cutting stroke, said cutting plates being mounted between said rollers, means pivotably supporting said tool carrier for pivoting about a tilting axis extending at substantially right angles to the sliding guide and for moving the tool carrier alternately into two angular positions respectively corresponding to a direction of travel of the tool carriage, a cutting plate entering into machining engagement with an associated plate edge in each of said angular position.

4,359,304

BOARD SEPARATOR

Marcel R. Trudeau, deceased, late of Eugene, Oreg. (by Claire Trudeau, administratrix), assignor to Seneca Sawmill Company, Inc., Eugene, Oreg.

Filed Mar. 31, 1980, Ser. No. 135,475
Int. Cl.[3] B65G *59/08*
U.S. Cl. 414—37 14 Claims



1. Board separating apparatus comprising:

means for receiving a group of boards on edge, said means including separator means against which the side of said group of boards is received in upstanding relation, said separator means comprising means for moving said group of boards in a lateral direction across a discontinuous supporting surface, and one by one off said surface, such that said boards successively drop away from the remainder of the boards of said group,

means for urging said group of boards against said separator means, including energizing means for imparting positive motion to said urging means in a direction toward said separator means for mutually aligning the boards of said group prior to separation, said urging means being upraised after aligning said boards leaving said boards free on their forward side to be moved off said discontinuous surface,

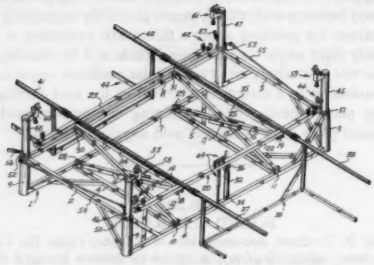
and a horizontal conveyor for receiving said boards wherein said boards are angularly disposed in passing from said discontinuous surface and fall onto said conveyor with a horizontal orientation.

4,359,305

METHOD AND APPARATUS FOR ACCUMULATING AND DISPENSING TRAY-LIKE OBJECTS

Roy E. Young, Enumclaw, and Douglas K. Stricklin, Federal Way, both of Wash., assignors to Weyerhaeuser Company, Tacoma, Wash.

Filed Dec. 5, 1979, Ser. No. 100,324
Int. Cl.³ B65G *57/30, 59/06*
U.S. Cl. 414—43 8 Claims



1. Apparatus for accumulating and dispensing shouldered trays traveling on a conveyor system which comprises:

a. a supporting frame;

b. elevator means for raising incoming trays from a receiving position to a storage position and lowering outgoing trays from a storage to a dispensing position, said elevator means having transport means compatible at a normal position of the elevator means with the adjacent conveyor system so as to allow movement of trays into and out of the apparatus;

c. a plurality of tray-retaining means, each mounted on rotatable post means held in the frame, each retaining means engageable with the tray shoulders so as to releasably support the lowest tray in a stored stack, said means acting in ratchet fashion from tray shoulder to tray shoulder to allow free upward passage of trays as new trays are added to the bottom of an accumulating stack, said means being mounted so as to allow clearance under any stored trays for at least one tray on the transport means when the elevator means is at its normal position;

d. biasing means holding the tray-retaining means at their tray retaining position;

e. disengaging means operatively associated with the tray-retaining means so as to release on demand the lowest tray in a stored stack onto the elevator means; and

f. means for rotating the tray-retaining means out of the path of entering and leaving stacks of trays.

4,359,306

SKID FOR STACKING HAY BALES

Lawrence Zimmerman, R.F.D. 2, New Richmond, Wis. 54017

Continuation-in-part of Ser. No. 802,640, Jun. 2, 1977, abandoned. This application Mar. 8, 1978, Ser. No. 884,419
Int. Cl.³ A01D *87/12*; B65G *57/32*
U.S. Cl. 414—44 3 Claims

1. A hay bale stacking sled adapted to be dragged behind a hay baler comprising:

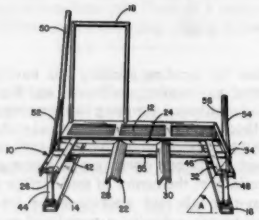
(a) means for attaching said sled to the rear of said hay baler,

(b) a transversely extending platform mounted on the forward portion of said sled for supporting a stacking operator thereon,

(c) said platform being rigidly affixed to a runner on each side of said sled, said runners being parallel and each having an upwardly curved forward end to facilitate the dragging of the sled along the ground,

(d) a bale-supporting assembly comprising, a transverse member adjacent the trailing edge of said platform, a plurality of bale-supporting arms extending rearwardly from said transverse member between said runners and adapted to support hay bales stacked thereon, a pair of parallel rearwardly extending frame elements positioned above said runners and connected to said transverse member, supporting elements pivotally connecting said frame elements to the front and rear of said runners to permit said assembly to be moved from a horizontal raised bale-carrying position to a horizontal lowered, bale-depositing position adjacent to the ground, means for raising and lowering said assembly,

(e) a bale-positioning arm, said arm having one end connected to said platform and extending rearwardly therefrom, said bale-positioning arm being parallel and positioned above and outwardly from one of the rearwardly extending frame elements on one side of said bale-supporting assembly, the bale-positioning arm and said frame



element being disposed relative to each other such that a line drawn between the inside edge of said arm and the inside edge of said rearwardly extending frame element forms an angle with the plane formed by the bottom surfaces of said runners of at least 55°, whereby the first bale to be loaded on the bale-supporting assembly by the operator is laid against one of the bale-supporting arms, the rearwardly extending frame element and the bale-positioning arm so that the long cross-sectional service of the bale will form an angle of at least 55° with the ground, a second row of bales being similarly laid against the first bale, and a third row of bales being similarly laid against the second row of bales, thereby forming a stack of bales wherein the bottom of each bale forms an angle of 10° to 35° with the ground to thereby provide a stable pyramidal stack while positioned on the bale-supporting assembly and when transferred to the ground.

4,359,307

VEHICLE FOR TRANSPORTING COMPRESSIBLE MATERIALS

James N. Johnson, Jr., Charlotte, N.C., assignor to Strick Corporation, Ft. Washington, Pa.

Filed Oct. 15, 1980, Ser. No. 197,301
Int. Cl.³ B60P *1/00*
U.S. Cl. 414—525 R 6 Claims

1. In a vehicle for transporting compressible materials having in combination:

(a) an enclosure having two side walls, a top wall, a bottom wall, a loading end, and a closed end;

(b) a bulkhead positionable transversely across said enclosure and having means thereon to facilitate securing the bulkhead at various locations in said enclosure;

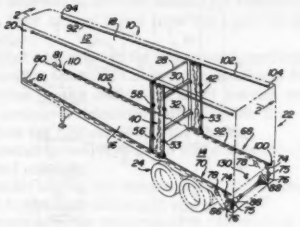
(c) a pair of wheeled trolleys each connected to a discrete loop arrangement for moving the trolleys longitudinally along the side walls, each loop arrangement being adjacent the intersection between a side wall and the bottom wall, said trolleys being disposed for moving opposite ends of said bulkhead toward said closed end;

(d) stabilizing means including a separate pair of cables associated with each trolley for stabilizing the trolleys in a vertical disposition, at least two discrete pulleys on each

trolley in contact with each cable, each cable extending along a side wall from a location adjacent the top wall at one end of said enclosure ends to a location adjacent the bottom wall at the opposite end of the enclosure; and

(e) drive means connected to each loop arrangement for driving them in synchronization, the improvement comprising:

(f) control means operatively connected to said drive means;



(g) removable actuating means operatively connected to said control means, said actuating means protruding through the bottom wall of said enclosure at a location adjacent said loading end and internal to said enclosure, whereby said actuating means is accessible by an operator situated at the loading end of said enclosure to enable said operator to view and accurately control the operation of said trolleys and said actuating means is removable to provide a protrusion-free bottom wall.

4,359,308

COUNTERBALANCE DEVICE FOR LASER KNIFE

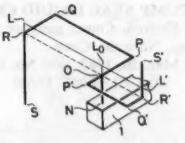
Tohru Nakajima, Tokyo, and Koichi Kamoi, Yoshikawa, both of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 7, 1980, Ser. No. 110,168

Claims priority, application Japan, Jan. 29, 1979, 54-9017

Int. Cl.³ A61B *17/36*

U.S. Cl. 414—719 **5 Claims**



1. A counterbalance device for a laser knife having a manipulator and comprising: means for counterbalancing said manipulator, said counterbalance means being coupled to said manipulator at a fulcrum, said counterbalance means so arranged that at an initial position thereof, moment balance with respect to said manipulator and said counterbalance means is maintained at said fulcrum and the centers of gravity of said manipulator and counterbalance means being in the same vertical plane wherein said manipulator and said counterbalancing means each comprise a plurality of arms, said arms being joined to one another only with rotary joints, and during operation of said device a plane along which the center of gravity of said manipulator moves is parallel to a plane along which the center of gravity of said counterbalance means moves in such a manner as to eliminate moment unbalance attributed to movement of the center of gravity of said manipulator at all positions within its range of movement.

4,359,309

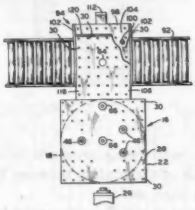
METHOD FOR TRANSFERRING A WORKPIECE IN AN AIR FLOAT SYSTEM

Raymond A. Bergman, 107 E. Second St., Minster, Ohio 45865

Division of Ser. No. 1,434, Jan. 8, 1979, which is a continuation-in-part of Ser. No. 924,958, Jul. 17, 1978, Pat. No. 4,179,106, which is a continuation of Ser. No. 815,676, Jul. 14, 1977, abandoned, which is a division of Ser. No. 684,725, May 10, 1976, Pat. No. 4,058,885. This application Jun. 2, 1980, Ser. No. 155,205

Int. Cl.³ B60V *1/00*

U.S. Cl. 414—786 **4 Claims**



1. A method for transferring a workpiece fixture from one supporting table to another comprising:

providing a first table having an upwardly facing upper surface on which a transfer plate is slidably supported, said transfer plate having an upwardly facing upper surface,

providing a second table having an upwardly facing upper surface horizontally spaced from the upper surface of the first table,

the workpiece fixture being supported on one of the plate and second table upper surfaces,

establishing a cushion of pressurized air between the plate and the upper surface of the first table so as to floatingly support the plate,

sliding the plate on the cushion of air to a position in close proximity to the second table upper surface with the plate and second table upper surfaces being in vertical register.

establishing a cushion of pressurized air between the fixture and said one of said plate and said second table upper surfaces so as to floatingly support the fixture, and

sliding the fixture on the last mentioned cushion of air onto the other of said plate and second table upper surfaces while at the same time providing a cushion of pressurized air between the fixture and said the other of said plate and second table upper surfaces to floatingly support the fixture as it is moved onto said the other of said plate and second table.

4,359,310

COOLED WALL

Wilhelm Endres, Remetschwil, and Dilip Mukherjee, Wettingen, both of Switzerland, assignors to BBC Brown, Boveri & Company Limited, Baden, Switzerland

Filed Sep. 29, 1980, Ser. No. 191,382

Claims priority, application Switzerland, Dec. 12, 1979, 11324/79

Int. Cl.³ F01D *5/14*

U.S. Cl. 415—115 **8 Claims**

1. A cooled wall, for instance for use with gas turbine elements, comprising:

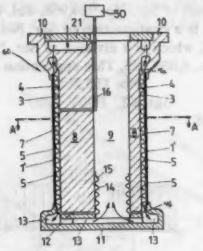
an outer plate;

an inner plate cooperating with said outer plate to enable the flow of a cooling agent therebetween; between the outer plate and the inner plate;

said partition wall forming with respect to the outer plate a cooling agent chamber and with respect to the inner plate a pressure equalization chamber;

said cooled wall being used at blading of gas turbines;

said blading essentially comprising a blading core having a flow channel, base plate, cover plate and an outer jacket which encloses in a profile-like fashion the blading core;



said partition wall being arranged over substantially the entire length of the blading between the outer jacket and the blading core; and

a lining arranged in said flow channel which partially covers an inner surface of said flow channel.

4,359,311

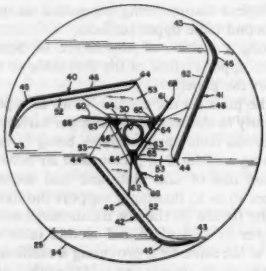
WIND TURBINE ROTOR

Alvin H. Benesh, 120 S. Adams Ave., Pierre, S. Dak. 57501

Filed May 26, 1981, Ser. No. 267,006

Int. Cl.³ F03D *3/06*

U.S. Cl. 416—197 A **11 Claims**



1. A turbine apparatus for utilization of the kinetic energy of moving air or fluid, comprising:

(a) a support member;

(b) a rotor mounted on said support member for rotation about said rotor's central axis, said rotor having three blades disposed symmetrically about said central axis, each of said blades having an outer edge and an inner edge with respect to said central axis, and further having a first curved portion and a second portion, said curved portion beginning at said outer edge and terminating at said second portion with said curved portion defining a surface generally concave with respect to said central axis, said curved portion having a radius of curvature which becomes progressively less from said outer edge to said second portion, said second portion extending from said curved portion and terminating at said inner edge, said inner edge lying in a first plane containing said central axis, said first plane disposed at an angle greater than 60° measured about said central axis from a second plane containing said outer edge and said central axis; and

(c) means connected to said rotor for converting rotation of said rotor to usable energy.

4,359,312

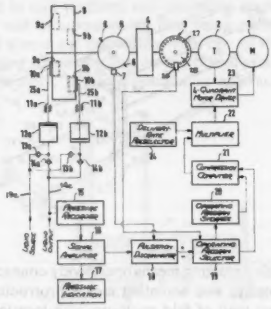
RECIPROCATING PUMP FOR THE PULSATION-FREE DELIVERY OF A LIQUID

Herbert Funke, Krailling, and Hans-Jurgen Riggenmann, Munich, both of Fed. Rep. of Germany, assignors to Zumtobel KG, Lindau, Fed. Rep. of Germany

Filed Aug. 15, 1978, Ser. No. 933,832

Int. Cl.³ F04B *49/00*

U.S. Cl. 417—18 **9 Claims**



1. A reciprocating piston pump for the pulsation-free delivery of a fluid with the use of at least two cylinders connected parallel on their discharge side, of which one in each instance sucks and the other delivers, in which the pistons working in said cylinders are controlled by a cam plate driven by rotary drive means, and in which each piston, for the purpose of compensating for the compressibility of the fluid, is caused to perform a precompression stroke following a shortened suction stroke wherein, during said precompression stroke, the piston speed is initially increased abruptly and then declines again until the end of the precompression stroke, characterized in that the length of the precompression stroke has a constant value, that the rotary speed of said drive means is reduced to a lower value at the beginning of fluid delivery and is restored to its normal value by the end of the precompression stroke.

4,359,313

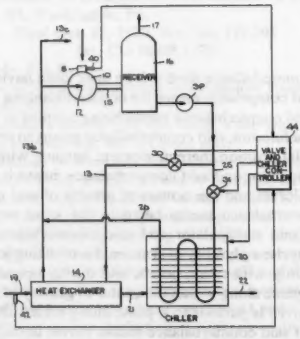
LIQUID RING PUMP SEAL LIQUID CHILLER SYSTEM

Paul V. Bernard, Shelton, Conn., assignor to The Nash Engineering Company, Norwalk, Conn.

Filed Mar. 10, 1980, Ser. No. 129,270

Int. Cl.³ F04C *19/00*

U.S. Cl. 417—68 **4 Claims**



1. In a system for evacuating fluid having liquid and gaseous phases and including a liquid ring pump connected to the

source of fluid, a first conduit for conveying seal liquid discharged from the pump, a heat exchanger normally connected to the first conduit for normally cooling the seal liquid in the first conduit by heat exchange with a cooling liquid, and a second conduit for normally conveying the cooled seal liquid from the heat exchanger to the pump for reuse as seal liquid in the pump, the improvement comprising:

a chiller for cooling the seal liquid discharged from the pump to a temperature below the temperature to which it can be cooled by the heat exchanger;

first means disposed in the first conduit for selectively stopping the flow of seal liquid from the pump to the heat exchanger;

a third conduit connected to the first conduit upstream of the first means for selectively conveying seal liquid from the first conduit to the chiller, the third conduit including second means for selectively stopping the flow of seal liquid from the first conduit to the chiller;

a fourth conduit for conveying seal liquid from the chiller to the second conduit;

third means for sensing the temperature of the cooling liquid supplied to the heat exchanger; and

means responsive to the third means for controlling the first and second means to stop the flow of seal liquid from the pump to the heat exchanger and to allow the flow of seal liquid from the first conduit by way of the third conduit to the chiller when the temperature of the cooling liquid is above a threshold temperature established as a function of the temperature of the fluid being evacuated, and to allow the flow of seal liquid from the pump to the heat exchanger and to stop the flow of seal liquid from the first conduit by way of the third conduit to the chiller when the temperature of the cooling liquid is below said threshold temperature.

4,359,314

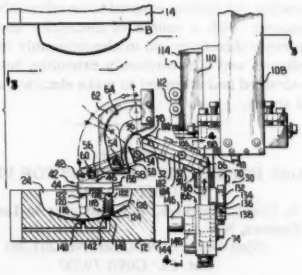
TRANSFER DEVICE FOR APPLYING LABELS TO BLOW MOLDS

Ernest W. Hellmer, Chicago, Ill., assignor to The Continental Group, Inc., Stamford, Conn.

Filed Sep. 30, 1980, Ser. No. 192,394

Int. Cl.³ B29C *17/07*; B65H *3/08, 3/46*

U.S. Cl. 425—503 **11 Claims**



1. A transfer device for transferring a label or like sheet from a stack to a moving member, said transfer device comprising a pivotally mounted arm, a transfer head pivotally mounted on said arm remote from its pivot and for pivoting with said arm and relative to said arm, said transfer head having transfer means for picking up and discharging labels and like sheets, return means coupled to said arm for positioning said arm and said transfer head with said transfer head being disposed adjacent said stack of sheets, drive means coupled to said arm for overcoming said return means and pivoting said arm and said return means in a selected direction to a position to deposit a transferred sheet on said moving member in response to movement of said moving member relative to said transfer device, and actuator means for pivoting said transfer head relative to said arm in said selected direction in response to pivoting of said arm whereby the total pivoting of said transfer head is greatly in excess of the pivoting of said arm.

4,359,315

APPARATUS FOR FUEL IGNITION SYSTEM INCLUDING COMPLETE CYCLING OF FLAME RELAY PRIOR TO TRIAL FOR IGNITION

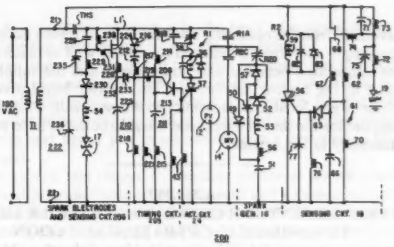
Russell B. Matthews, Goshen, Ind., assignor to Johnson Controls, Inc., Milwaukee, Wis.

Division of Ser. No. 896,761, Apr. 17, 1978, Pat. No. 4,230,444.

This application Aug. 11, 1980, Ser. No. 176,655

Int. Cl.³ F23Q *9/08*

U.S. Cl. 431—25 **8 Claims**



3. In a fuel ignition system including a pilot valve for supplying fuel to a pilot outlet for ignition by sparks provided by a spark generating means to establish a pilot flame, and a main valve for supplying fuel to a main burner for ignition by the pilot flame, a control arrangement comprising: activate means operable to generate a start signal to initiate an ignition cycle; switching means for controlling the operation of said pilot valve; timing circuit means responsive to said start signal for defining a trial for ignition interval, said timing circuit means enabling said switching means to energize said pilot valve during said trail for ignition interval and disabling said switching means to deenergize said pilot valve at the end of said trial for ignition interval; first flame sensing means operable when a flame is sensed during said trial for ignition interval to cause said timing circuit means to maintain said switching means enabled after said trial for ignition interval; and second flame sensing means operable when a flame is sensed during said trial for ignition interval to effect the energization of said main valve.

4,359,316

SUPPLY UNIT FOR THE INDIVIDUAL SUPPLY OF DENTAL HANDPIECES

Dietmar Kümmel, Eberhardzell, and Franz-Xaver Boeckh, Schönebürg, both of Fed. Rep. of Germany, assignors to Kaltenbach & Voight GmbH & Co., Biberach, Fed. Rep. of Germany

Filed Nov. 17, 1980, Ser. No. 207,640

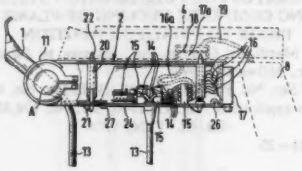
Claims priority, application Fed. Rep. of Germany, Nov. 19, 1979, 2946594

Int. Cl.³ A61C *1/14*

U.S. Cl. 433—79 **5 Claims**

1. In a supply unit having a plurality of adjacent arranged modular hollow carriers each associated with a dental handpiece; a supply element associated with each said carrier for the individual supply of each handpiece, said supply elements being located adjacent each other; through conduits extending through the collective supply elements and conveying supply media for said handpieces; connecting conduits extending across said carriers and connecting said through conduits with respective handpieces; a holder in each said carrier; and supply

components fastened interiorly of each carrier to respectively one said holder, said supply components being connected into the associated supply conduits leading to an associated handpiece, the improvement comprising: said holder supporting the supply components is formed by a bottom wall section of a chest shaped hollow carrier said holder being downwardly



pivotable from its operating position so as to render accessible the supply components fastened thereto as well as maintaining the connection between said components and the supply element in the hollow carrier, and said holder being pivotable about an axis located in proximity to the rear wall, whereby the support for the dental handpiece is constructed so as to remain stationary in the carrier.

4,359,317

ARRANGEMENT FOR CONVEYING A STERILE LIQUID TO A SURGICAL OPERATING LOCATION

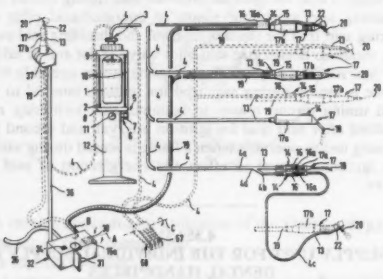
Ernst Strohmaier, Bd. Schussenried; Hans Scheicher, Munich, and Eugen Elbofner, Biberach, all of Fed. Rep. of Germany, assignors to Kaltenbach & Voight GmbH & Co., Biberach, Fed. Rep. of Germany

Filed Dec. 3, 1980, Ser. No. 212,513

Claims priority, application Fed. Rep. of Germany, Jun. 12, 1979, 2949142

Int. Cl.³ A61C *1/10, 1/12*

U.S. Cl. 433—85 **5 Claims**



1. An arrangement for the conveyance of a sterile liquid to a medical handpiece **(17)**, supplied by means of a supply hose **(19)**, in which the sterile liquid is ejected under pressure from a dispensing end of an elastic hose dispensing conduit **(4)** at the head of the handpiece **(17)**, wherein the dispensing conduit **(4)** is provided with a clamping regulating valve **(16)** in proximity to the handpiece **(17)**, for adjustment of its throughflow rate and wherein the handpiece **(17)** contains a compressed air conduit **(29)**, for example for driving a turbine motor or for the formation of a spray, which is controlled by a valve in the supply hose **(19)**, characterized in that said clamping regulating valve **(16)** is connected downstream to an on/off clamping valve **(15)** acting on said elastic dispensing conduit **(4)** which is connected through a bypass conduit **(51)** to said compressed air conduit **(29)**, said on/off clamping valve **(15)** comprising a piston **(39)** arranged in a cylinder **(38)**, and wherein both said clamping valves **(15,16)** function by clamping said elastic hose dispensing conduit **(4)** and are combined in a valve arrangement **(14)** located in proximity to the connection of the supply hose **(19)** to the handpiece **(17)** and are detachably connected thereto.

4,359,318

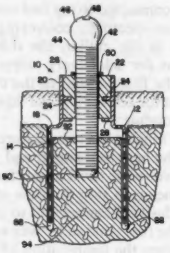
DENTAL IMPLANT

Neal Gittleman, 4039 Spruce St., Philadelphia, Pa. 19104

Filed Dec. 18, 1981, Ser. No. 332,159

Int. Cl.³ A61C *8/00*

U.S. Cl. 433—173 **19 Claims**



1. An implant for attaching a dental appliance to a jaw bone comprising:

(a) a sleeve member having a substantially cylindrical vertically extending bottom portion including a plurality of apertures therethrough, an open bottom, and a cylindrical neck portion positioned above said bottom portion, said bottom portion being constructed and arranged to be snugly inserted into an annular cut formed in the upper surface of the jaw bone to there define an upwardly extending substantially cylindrical stump:

(b) an electrically non-conductive collar member mounted within said neck portion of said sleeve member and having a central vertically extending opening; and

(c) electrode means mounted to said collar member within said central opening and electrically isolated from said sleeve member, said electrode means having an upwardly extending top portion adapted to be releasably electrically connected with a source of electricity and to receive electricity therefrom and to also releasably retain a dental appliance, and a downwardly extending bottom portion constructed and arranged to make electrical contact with said stump.

4,359,319

VISUAL INSTRUCTION SYSTEMS FOR PRINTED CIRCUIT BOARDS

Gerard B. Greco, Brooklyn, N.Y., assignor to Loral Corporation, Yonkers, N.Y.

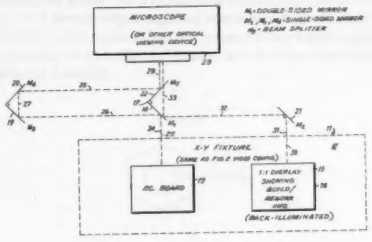
Filed Oct. 27, 1980, Ser. No. 201,201

Int. Cl.³ G09B *19/00*

U.S. Cl. 434—224 **1 Claim**

1. A visual instruction system for the building and rework of printed circuit boards comprising: a work fixture having a first location for supporting a workpiece, and a second location including a back-illuminated recess positioned in spaced coplanar relation with respect to said first location; a printed circuit board workpiece disposed at said first location; a transparent corresponding sized overlay showing components and modifications to be incorporated on said workpiece disposed in said second location; and means including an optical viewing device overlying said first location and a mirror and beam splitter system conducting in highly magnified condition images from said first and second locations to said optical viewing device for displaying an image of said workpiece with said overlay to

appear as positioned upon the workpiece to provide a visual comparison to an operator of the instantaneous state of the



workpiece relative to a fully completed state indicated by said overlay.

4,359,320

JAW SET FOR SNAKE MOUNT

Darwin E. Thomas, 8830 Stonelake Pl., Shreveport, La. 71108

Filed Jan. 19, 1981, Ser. No. 226,036
Int. Cl.³ G09B 23/36
U.S. Cl. 434—296 2 Claims

1. A jaw set for mounting in the head of a snake mold to simulate the open mouth of a snake comprising:

(a) an upper jaw shaped to resemble the upper jaw of a snake and provided with simulated anatomical fang roots, poison sacs, palate, jaw muscles, a substantially flat top and a substantially flat rear end at the rear of said top for mounting said upper jaw in said mold, and a first shaped face; and

(b) a lower jaw shaped to resemble the lower jaw of a snake and provided with simulated teeth and a shaped anatomical gum and tongue, and a second shaped face for mating with said first shaped face of said upper jaw and maintaining said upper jaw and said lower jaw in open configuration.

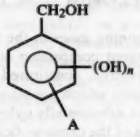
4,359,321

DYE COMPOSITIONS AND METHOD OF USING SAME

Stephen Y. Lin, Wausau, Wis., assignor to American Can Company, Greenwich, Conn.

Division of Ser. No. 123,696, Feb. 22, 1980, Pat. No. 4,308,203. This application Sep. 3, 1981, Ser. No. 299,039
Int. Cl.[3] D06P *67/00;* C07G *1/00*
U.S. Cl. 8—528 8 Claims

1. A dyestuff composition comprising a water-insoluble dye; and the lignin adduct of a sulfonated lignin material containing about 2 to 8 percent by weight of combined organic sulfur, and about 0.05 to 4.0 millimoles, per gram of the lignin moiety of said material, of an hydroxyl benzyl alcohol compound having the general formula:



wherein n is an integer from 1 to 3 and A is a substituent selected from the group consisting of hydrogen, lower alkyl groups and the hydroxymethyl group, said adduct being present in a weight ratio to said dye of from about 0.25 to 0.75:1.0.

4,359,322

DYEING PROCESS

Bobby L. Neal, and Steven R. Lowman, both of Rock Hill, S.C., assignors to Neal Chemical Company, Inc., Rock Hill, S.C.

Filed Jun. 6, 1980, Ser. No. 157,051
Int. Cl.[3] D06P *1/382, 1/384, 3/872*
U.S. Cl. 8—532 26 Claims

1. A one bath process for dyeing cellulosic containing textile materials with fiber-reactive dyestuffs comprising the steps of:

(a) preparing a dye bath which comprises a dye assist system that is stable to high electrolyte and alkali; from about 110 to about 160 grams of electrolyte per liter of bath; and a predetermined amount of alkaline material that permits proper exhaustion of dyestuff therefrom and level dyeing, said dye bath having a pH of from about 8.5 to about 12.5;

(b) adding a predetermined dyestuff formulation to the dye bath to achieve a predetermined shade, said dyestuff formula containing at least one fiber reactive dyestuff;

(c) subjecting said material to said dye bath at a predetermined time-temperature relationship to dye said material to said shade; and

(d) thereafter rinsing and scouring said material.

4,359,323

SINGLE PUMP LIQUID CHROMATOGRAPH ANALYTICAL SYSTEM FOR AMINES

James N. LePage, Hudson, N.H., assignor to W. R. Grace & Co., New York, N.Y.

Filed Oct. 31, 1980, Ser. No. 202,628
Int. Cl.[3] G01N *31/08*
U.S. Cl. 23—230 M 6 Claims

1. A method for analyzing solutions containing unknown components having amine functionality by means of liquid chromatography comprising:

(a) providing a mobile phase reservoir, at least one component of the mobile phase in said reservoir being a reactive component selected from the group consisting of ninhydrin-hydrindantin and peri-naphthindan-2,3,4-trione hydrate;

(b) adding a solution containing at least one unknown component having amine functionality to said mobile phase to form a mixture;

(c) passing said mixture through a liquid chromatography column wherein the unknown components are selectively adsorbed to differing extents thereby providing at the exit end thereof a mobile phase containing varying amounts of particular unknown components;

(d) contacting the mobile phase solution which exits said liquid chromatography column with radiant energy to react at least one of the separated unknown components with the reactive component of said mobile phase to form one or more reaction products;

(e) determining the identity of at least one of the unknown components by means of detecting a particular and known characteristic of the reaction product; and

(f) directly flowing the modile phase containing said one or more reaction products to said mobile phase reservoir.

4,359,324

DIESEL ENGINE FUEL COMPOSITION AND USE OF SAME FOR OPERATING DIESEL ENGINES

Hugh R. Elsea, Jr., Rte. 3, Box 149, Troutville, Va. 24175, and Lionel L. Etheridge, 956 Stonegate Dr., Salem, Va. 24153

Filed Mar. 27, 1981, Ser. No. 248,445
Int. Cl.[3] C10L *1/18*
U.S. Cl. 44—53 6 Claims

1. A fuel composition for a diesel internal combustion engine which consists essentially of a homogeneous mixture of about 25–75% of a vegetable seed oil which is normally liquid at the ambient operating temperature range of said engine and free of matter which is solid within said range, and about 75–25% of a butyl alcohol, said percentages being by volume.

4,359,325

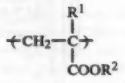
COPOLYMERS FROM ACRYLATE DICARBOXYLIC COMPOUNDS AND DIISOBUTYLENE AS OIL ADDITIVES

Francois Dawans, Bougival; Jean-Pierre Durand, Chatouo, and Daniel Binet, Rueil-Malmaison, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Dec. 15, 1980, Ser. No. 216,453
Claims priority, application France, Dec. 13, 1979, 79 30557; Dec. 13, 1979, 79 30558
Int. Cl.[3] C10L *1/22;* C08F *220/12;* C08K *5/01;* C08L *1/18*
U.S. Cl. 44—62 30 Claims

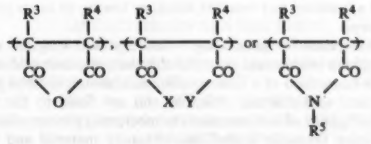
1. A copolymer consisting essentially of:

(A) 10–94% by mole of acrylic ester units having the formula



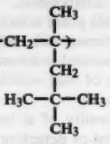
wherein R^1 is H or CH_3; and R^2 is C_{1-30} alkyl;

(B) 3–65% by mole of dicarboxylic units having the formula



wherein R^3 and R^4 are each independently H or CH_3; X and Y are each independently OR^2, OR^5 or NHR^5; wherein R^2 is C_{1-30} alkyl; and R^5 is H or a monovalent organic radical; and

(C) 3–40% by mole of diisobutylene units having the formula



wherein the molar proportion of the units having the formula (B) is at least as high as the molar proportion of the units having the formula (C); and wherein said copolymer has a number average molecular weight of 500–250,000.

8. A hydrocarbon oil composition comprising a major proportion of hydrocarbon oil and a minor proportion of at least one copolymer according to claim 1 sufficient to improve the cold-flow properties of said hydrocarbon oil.

4,359,326

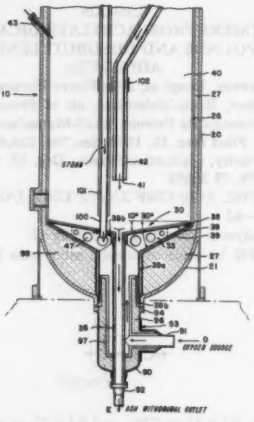
FLUIDIZED BED REACTOR APPARATUS AND RELATED GASIFICATION SYSTEM

Franklin D. Hoffert, Mountainside; John D. Milligan, Little Silver, both of N.J.; Jose M. Marina, and Jose M. Fernandez, both of Miami, Fla., assignors to Hydrocarbon Research, Inc., Lawrenceville, N.J.

Continuation of Ser. No. 33,503, Apr. 26, 1979, abandoned. This application Nov. 20, 1980, Ser. No. 208,762

Int. Cl.³ B01J *3/00*

U.S. Cl. 48—62 R **19 Claims**



1. A gasification reactor assembly comprised of the following:

(a) a reactor vessel housing structure;

(b) a fluidized bed reaction chamber having an inner periphery;

(c) a means for generating a fluidized bed reaction atmosphere within said reaction chamber, wherein said means is comprised of a floating plenum chamber located proximate said reaction chamber and not fixed to the inner periphery of said reaction chamber, said plenum chamber being floatably seated on refractory material and unattached to any portion of the reactor vessel housing structure to allow for differential thermal expansion;

(d) a means for introducing oxygen into said plenum chamber;

(e) a means for introducing steam into said plenum chamber, said oxygen and steam being premixed within said plenum chamber;

(f) a means for introducing combustible carbon containing material into said reaction chamber; and

(g) a means for removing the resultant product gases from within said reaction chamber.

4,359,327

GAS ADSORPTION AGENTS PARTICULARLY FOR SEPARATING H_2 FROM A GASEOUS PHASE

Michel B. Armand, Annecy, and Francis J. P. Jeanne, Saint-Ismier, both of France, assignors to Agence Nationale de Valorisation de la Recherche, Neuilly sur Seine, France

Filed May 28, 1980, Ser. No. 153,865

Claims priority, application France, May 29, 1979, 79 13697

Int. Cl.³ B01D *53/04, 59/14*

U.S. Cl. 55—16 **24 Claims**

1. A method of retaining gases in the intramolecular cavity of a gas adsorption agent comprising at least one paracyclophane (or PCP) derivative, constituted by cyclic oligomers formed of oligomer-units which are interlinked so as to define a rigid structure with a substantially cylindrical intramolecular cavity, the dimensions of the cross-section of said cavity corresponding substantially to those of the one or more types of gas molecules that it is desired to insert therein, the rigidity of said structure being such that the rotary movements of the atoms which constitute said units cannot result in substantial variations in the volume of said cavity up to a temperature of the order of 250° C., which comprises:

(a) contacting a medium comprising the gas to be adsorbed whose molecules have a dimension substantially similar to those of the internal space of said gas adsorption agent with the aforesaid gas adsorption agent;

(b) permitting said gas adsorption agent to adsorb said gas; and

(c) separating said gas adsorption agent containing said adsorbed gas from the medium previously containing said adsorbed gas.

4,359,328

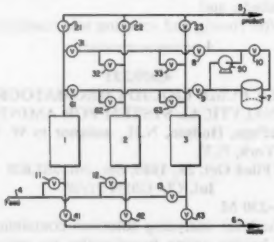
INVERTED PRESSURE SWING ADSORPTION PROCESS

Peter H. Wilson, Findlay, Ohio, assignor to Union Carbide Corporation, Danbury, Conn.

Continuation-in-part of Ser. No. 136,671, Apr. 2, 1980, abandoned. This application Oct. 9, 1981, Ser. No. 310,038

Int. Cl.³ B01D *53/04*

U.S. Cl. 55—26 **23 Claims**



1. A cyclic inverted pressure swing adsorption process for enhancing the purity of the readily adsorbable gas component recovered from a gas mixture of said gas component with a less readily adsorbable gas component comprising:

(a) introducing said gas mixture at a first, low pressure to an adsorption column containing an adsorbent capable of selectively adsorbing the readily adsorbable gas component therefrom, the less readily adsorbable gas component of the mixture being adsorbed at said low pressure, displacing and depleting the more readily adsorbable gas

component in the adsorbed phase, resulting in an advancing gas phase zone of said readily adsorbable gas component preceding a gas phase zone containing both readily and less readily adsorbable gas components;

(b) increasing the pressure in said column to a second, high pressure causing selective adsorption of the readily adsorbable gas component, thereby depleting said component in the gas phase and enriching said gas phase in the less readily adsorbable gas component;

(c) purging the column with said readily adsorbable gas component at said high pressure to remove said gas phase enriched in the less readily adsorbable gas component from said column;

(d) depressurizing said column from said high pressure, the depressurization resulting in a release of the readily adsorbable gas component from the adsorbent; and

(e) repeating said steps (a)-(d) on a cyclic basis with additional quantities of said gas mixture,

whereby the inverted pressure swing adsorption cycle results in an increased adsorption of the more readily adsorbable gas component by the adsorbent at high pressure and increased separation of said component from the less readily adsorbable gas component at said high pressure, enhancing the purity of said readily adsorbable gas component recovered upon depressurization of the column following the convenient purging of the less readily adsorbable gas component therefrom.

4,359,329
OIL SEPARATOR FOR COMPRESSORS OF HEAT PUMPS AND CHILLERS

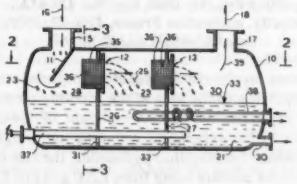
Eberhard Willeitner, Utting a.Ammersee, Fed. Rep. of Germany, assignor to M.A.N. Maschinenfabrik Augsburg-Nurnburg A.G., Munich, Fed. Rep. of Germany

Filed Apr. 10, 1981, Ser. No. 252,744

Claims priority, application Fed. Rep. of Germany, Apr. 12, 1980, 3014148

Int. Cl.³ B01D *45/12*

U.S. Cl. 55—186 **3 Claims**



1. An oil separator for compressors of heat pumps and chillers, comprising:

an elongated horizontally oriented container having an inlet near one end through which an oil-refrigerant vapor mixture can be introduced into the container, the container having outlets near its other end for the separated oil and refrigerant vapor, respectively, the bottom of the container constituting a sump within which oil accumulates, a deflector within the container located in the path of flow of the oil-vapor mixture,

a partition within the container downstream of the deflector, the partition extending transverse to the longitudinal direction of the container and across the entire cross-sectional area of the container, the partition having an opening in its lower portion located within the sump,

a demister carried by the partition at a location above the level of oil in the sump, such that the oil-vapor mixture must flow through the demister to reach the outlets, the cross-sectional flow area of the demister being smaller than the surface area portion of the partition located above the level of oil in the sump, the demister flow area being large enough to prevent a pressure drop across the partition.

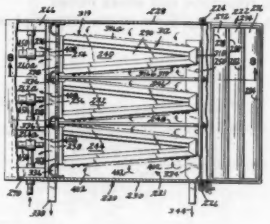
4,359,330
SELF-CLEANING PULSED AIR CLEANER WITH INTEGRAL PRECLEANER

George A. Copley, Farmington, Minn., assignor to Donaldson Company, Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 195,873, Oct. 10, 1980. This application Mar. 12, 1981, Ser. No. 242,999

Int. Cl.³ B01D *46/04*

U.S. Cl. 55—273 **14 Claims**



1. A cleaner apparatus for removing particulate matter from air, comprising, in combination:

(a) a housing having an unfiltered air inlet, a filtered air outlet and a scavenge means distant from said inlet whereby an air flow may be established from said inlet to said outlet and from said inlet to said scavenge means;

(b) a filter assembly within said housing including:

(1) a filter having unfiltered and filtered sides, said filtered side being isolated from unfiltered air and wherein said isolated side is in fluid communication with said filtered air outlet:

(2) a louvered precleaner located proximate said unfiltered side and defining an intermediate space between said unfiltered side and said precleaner, said precleaner including a divider plate having a plurality of successive louvers therein, each of said louvers defining a passageway through said divider into said intermediate space, said passageways facing generally in the direction of said air flow from said air inlet to said scavenge means whereby said louvers will cause inertial separation of particulate matter suspended in said air flow;

(3) a reverse pulsed jet located proximate said filtered air side, said jet intermittently operable to provide a reverse flow of air through said filter and out of said unfiltered side so that particulate matter will become dislodged therefrom and enter said intermediate space;

(4) closure means responsive to said reverse flow for blocking each of said passageways; and

(5) outlet means in said intermediate space for putting said space in fluid communication with said scavenge means and for constantly exhausting said reverse flow out of said space so that particulate matter suspended in said flow will tend not to be re-entrained on said unfiltered air side.

4,359,331
CONTACTOR-SEPARATOR UNITS

Jean Beaujard, Orange; Jean-Claude Menes, Bernin, and Jean Ravoire, Saint-Ismier, all of France, assignors to Commissariat a l'Energie Atomique, France

Filed Apr. 28, 1978, Ser. No. 901,082

Claims priority, application France, Apr. 29, 1977, 77 13644

Int. Cl.³ B01D *59/00*

U.S. Cl. 55—342 **1 Claim**

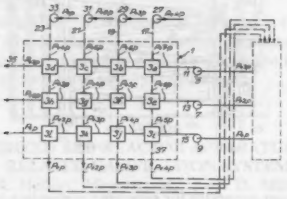
1. A sub-assembly for an exchange or extraction apparatus between a first and a second mutually immiscible fluid phases, comprising:

an enclosure formed with intake means and outlet means for a first fluid phase, and with intake means and outlet means for a second fluid phase;

a plurality of substantially identical bodies of right prismatic shape having a cross-sectional area which is variable along a direction transverse to the other generatrices, placed in staggered relation and defining passages from the intake means to the outlet means for each phase, two adjacent bodies disposed side by side forming one of m×n contactor-separator units (m and n being integers greater than 1), distributed in m lines and n columns,

means for delivering flows of the first phase to the first contactor-separator units of respective ones of said lines through respective said intake means,

means for delivering flows of the second phase to the first



contactor-separator units of respective ones of said columns through said intake means for said second phase,

said passages being arranged for said flows in the enclosure to be transverse to said generatrices and to be in countercurrent in each one of said contactor-separator units,

m first pumping units each associated with one of said m lines and providing a pressure increase equal to the head loss impressed to the first phase flow by all contactor-separator units in said one line,

and n second pumping units each associated with one of said n columns and providing a pressure increase equal to the head loss impressed to the second phase flow by all contactor-separator units in said one column.

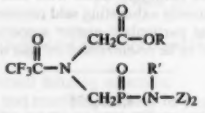
4,359,332

AMIDE AND HYDRAZIDE DERIVATIVES OF N-TRIFLUOROACETYL-N-PHOSPHONOMETHYLGLYCINE AS HERBICIDES

John E. Franz, Crestwood, and Robert J. Kaufman, University City, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Jul. 10, 1978, Ser. No. 922,923
Int. Cl.³ A01N *57/00*; C07C *101/00, 101/26*
U.S. Cl. 71—86 **15 Claims**

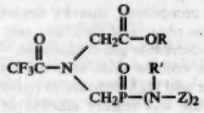
1. A compound of the formula



wherein R is an alkyl group of from 1 to 10 carbon atoms, a chloro lower alkyl group, a lower alkoxy lower alkyl group containing from 3 to 6 carbon atoms or a lower alkoxy lower alkoxy lower alkyl group containing from 5 to 9 carbon atoms, R′ is hydrogen, lower alkyl, lower alkenyl, or lower alkynyl, Z is a

group wherein R^2 is lower alkyl, phenyl or substituted phenyl with up to five substituents individually selected from the class consisting of halogen, lower alkyl and lower alkoxy and R^3 is hydrogen or lower alkyl.

6. A herbicidal composition comprising an inert adjuvant and an effective amount of a compound of the formula



wherein R is an alkyl group of from 1 to 10 carbon atoms, a chloro lower alkyl group, a lower alkoxy lower alkyl group containing from 3 to 6 carbon atoms or a lower alkoxy lower alkoxy lower alkyl group containing from 5 to 9 carbon atoms, R′ is hydrogen, lower alkyl, lower alkenyl, or lower alkynyl, Z is a

group wherein R^2 is lower alkyl, phenyl or substituted phenyl with up to five substituents individually selected from the class consisting of halogen, lower alkyl and lower alkoxy and R^3 is hydrogen or lower alkyl.

4,359,333

PROCESS FOR THE HERBICIDAL TREATMENT OF SORGHUM USING 2,4-DIAMINO-6-CHLORO-5-METHYLTHIO-PYRIMIDINE

Daniel H. Balde, Paris, and Gerard E. M. Boutemy, Milly la Foret, both of France, assignors to Produits Chimiques Ugine Kuhlmann, Courbevoie, France

Filed Feb. 14, 1980, Ser. No. 121,613
Claims priority, application France, Feb. 23, 1979, 79 4635
Int. Cl.³ A01N *43/48, 43/64*
U.S. Cl. 71—92 **1 Claim**

1. A process for destroying weeds in sorghum crops which comprises applying to the area of the growing crop a mixture containing approximately 89% by weight of 2,4-diamino-6-chloro-5-methylthio-pyrimidine and 11% by weight of 4,6-diamino-2-chloro-5-methylthio-pyrimidine, the rate of application of the above mixture being from 1,200 g/ha to 3,600 g/ha.

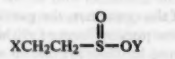
4,359,334

COMPOSITION FOR PLANT GROWTH REGULATION

Michael J. Brown, Randolph, N.J., assignor to GAF Corporation, New York, N.Y.

Filed Apr. 28, 1980, Ser. No. 144,504
Int. Cl.³ A01N *43/36*
U.S. Cl. 71—95 **15 Claims**

1. A coacting plant growth promoting composition consisting essentially of a 2-haloethyl sulfinate having the formula:

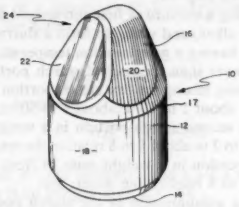


wherein X is a halogen atom and Y is alkyl or alkenyl of 1 to 20 carbon atoms optionally substituted with halogen and a promotional ethylene generating amount of a pyrrolidone selected from the group consisting of N-methylpyrrolidone, pyrrolidone, and polyvinylpyrrolidone in a mole ratio of between about 0.5:1 and about 3:1.

4,359,335
METHOD OF FABRICATION OF ROCK BIT INSERTS OF TUNGSTEN CARBIDE (WC) AND COBALT (CO) WITH CUTTING SURFACE WEAR PAD OF RELATIVE HARDNESS AND BODY PORTION OF RELATIVE TOUGHNESS SINTERED AS AN INTEGRAL COMPOSITE

Lloyd L. Garner, Dana Point, Calif., assignor to Smith International, Inc., Newport Beach, Calif.

Filed Jun. 5, 1980, Ser. No. 156,717
Int. Cl.³ B22F *7/00*; C04B *35/56*; E21B *9/36*; E21C *35/18*
U.S. Cl. 75—208 R **2 Claims**



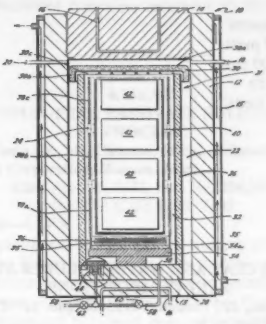
1. A method for enhancing the wear resistance of inserts in the gage row of a cone in a roller cone rock bit comprising the steps of:
- mixing a first mixture of tungsten carbide powder having a grain size from three to four microns and cobalt powder in the range of nine to eleven percent of the mixture;
- mixing a second mixture of tungsten carbide powder having a grain size from five to six microns and cobalt powder in the range of fifteen to sixteen percent of the mixture;
- pressing a portion of the first mixture into a wear pad die cavity at a pressure of about fifteen tons per square inch for forming an unsintered wear pad;
- positioning the pressed, unsintered wear pad into an insert body die cavity having a wear pad cavity complementary to the wear pad;
- pressing a portion of the second mixture into the balance of said body die cavity at a pressure of about fifteen tons per square inch, for forming the body of said insert;
- sintering said pressed insert in a furnace for about one hundred minutes at a temperature of about fourteen hundred degrees centrigrade for forming an insert for the gage row of a rock bit with a relatively harder wear resistant pad for contacting formation adjacent the gage of a bore hole and a relatively tougher body; and
- pressing the body of such inserts into an interference fit in the gage row of a cone of a rock bit in a location wherein the wear pad is adjacent the gage of the rock bit.

4,359,336
ISOSTATIC METHOD FOR TREATING ARTICLES WITH HEAT AND PRESSURE

Arnold G. Bowles, Jenkintown, Pa., assignor to Pressure Technology, Inc., Huntingdon Valley, Pa.

Division of Ser. No. 57,859, Jul. 16, 1979. This application Jul. 28, 1980, Ser. No. 173,128
Int. Cl.³ B22F *3/14*
U.S. Cl. 75—226 **5 Claims**

1. A method of treating articles with high heat and pressure, said method comprising the steps of placing an article in a vessel and placing heat insulating means about said article to divide the vessel into an inner chamber portion in which the article is located and an outer chamber portion, introducing an inert gas into said vessel and raising the pressure of said gas to a desired level, raising the temperature of the gas in the inner chamber portion to a desired level and supplying a coolant to keep the gas in the outer chamber portion at a lower temperature, maintaining the desired pressure and temperature levels for a predetermined time and preventing circulation of the gas between said chamber portions during said predetermined time and thereafter providing a direct interior opening between said



chamber portions at the bottom thereof allowing said gas to circulate through said chamber portins whereby cooling of the gas is accelerated.

4,359,337
PROCESS FOR THE MANUFACTURE OF BASIC SLAGS FOR THE ELECTROSLAG REMELTING PROCESS

Anton More, Burghausen, Fed. Rep. of Germany, assignor to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed Aug. 31, 1981, Ser. No. 297,967
Claims priority, application Fed. Rep. of Germany, Sep. 26, 1980, 3036461
Int. Cl.³ C22B *9/10*
U.S. Cl. 75—257 **4 Claims**

1. A process for the manufacture of basic slags for the electroslag remelting process that have an analytical content of:
- 0.2–15% by weight of SiO_2;
- 12–40% by weight of Al_2O_3;
- 15–40% by weight of an alkaline earth metal oxide;
- 12–75% by weight of CaF_2;
- up to 0.5% by weight of FeO;
- up to 1% by weight of MnO;
- up to 10% by weight of TiO_2; and
- impurities resulting from the raw materials,

comprising the steps of:
- forming a slag by mixing predominantly oxidic components, in which the content of fluoridic component is not more than 5% by weight, with predominantly fluoridic components, in which the content of oxidic components is not more than 5% by weight, the predominantly oxidic components and predominantly fluoride components being melted separately, being cooled, solidified and broken into smaller components before being mixed.

4,359,338
COATING COMPOSITION ADAPTED FOR ELECTRIC GENERATORS

Maynard R. Winstead, West Peabody, Mass., assignor to General Electric Company, Schenectady, N.Y.

Filed Apr. 16, 1981, Ser. No. 254,787
Int. Cl.³ C09D *3/64*, *5/08*
U.S. Cl. 106—14.13 **9 Claims**

1. An air-drying coating composition adapted to provide corrosion-resistant coatings relatively free of certain trace elements which comprises:
- (a) an alkyd resin solution;
- (b) pigments;
- (c) calcium drier;
- (d) zirconium drier;
- (e) manganese drier; and

(f) water

said composition containing not more than the following amounts of trace elements per million parts of the coating composition:

chlorine: ϕparts
cobalt: 200 parts
fluorine: 200 parts
lead: 50 parts
sulfur: 250 parts.

4,359,339

BENTONITE CLAY AND WATER SOLUBLE ALUMINUM SALT COMPOSITIONS

James Van Fisk, Jr., Houston, Tex., assignor to NL Industries, Inc., New York, N.Y.

Continuation of Ser. No. 217,471, Dec. 16, 1980, abandoned, which is a continuation of Ser. No. 35,698, May 3, 1979, abandoned. This application Oct. 19, 1981, Ser. No. 312,213
Int. Cl.³ B28B 7/34
U.S. Cl. 106—38.3 3 Claims

1. A method for producting a foundry sand mixture suitable for use in making sand molds comprising;

(a) preparing a pumpable binder clay slurry consisting of a mixture of sodium bentonite clay, a viscosity depressing amount of water-soluble aluminum salt selected from the group consisting of hydrated and unhydrated aluminum sulfate, aluminum acetate, aluminum nitrate and mixtures thereof, and water which contains about 11 to 26 weight percent sodium bentonite clay and a weight ratio of clay to aluminum salt of from 1/1 to 99/1 ; and

(b) mulling said binder clay slurry with foundry sand to form said foundry sand mixture.

4,359,340

TIRE CURING BLADDER LUBRICANT

Louis F. Comper, and Robert F. Scheiderich, both of Danville, Va., assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Nov. 20, 1980, Ser. No. 208,612
Int. Cl.³ B28B 7/36
U.S. Cl. 106—38.22 5 Claims

1. A lubricant composition comprising an aqueous emulsion consisting essentially of:

(i) about 20 to about 40 parts by weight polydimethylsiloxane characterized by having a viscosity in the range of about 12 million to about 28 million centistokes at 25° C.;

(ii) about 12 to about 20 parts by weight of at least one silane selected from (a) a methyl hyrogen silane, characterized by having a viscosity in the range of about 20 to about 40 centistokes at 25° C.,

(b) dimethyl hydrogen silane characterized by having a viscosity in the range of about 80 to about 120 centistokes at 25° C. and (c) methyl trimethoxy silane;

(iii) optionally, about 3 to about 12 parts by weight of a metal salt of an organic acid selected from at least one of zinc, magnesium, manganese and cobalt acetate, stearate, propionate and octoate;

(iv) about 10 to about 25 parts by weight surfactant for said polydimethylsiloxane and

(v) about 500 to about 1500 parts by weight water.

4,359,341

STARCH BASED ADHESIVES AND METHOD THEREFOR

Leon A. Allen, East Ivanhoe, Australia, assignor to Harper-Love Adhesives Corporation, Charlotte, N.C.

Continuation-in-part of Ser. No. 176,529, Aug. 8, 1980, abandoned, which is a continuation-in-part of Ser. No. 169,292, Jul. 15, 1980, abandoned. This application Nov. 27, 1981, Ser. No. 325,116
Claims priority, application Australia, Jul. 27, 1979, PD9758
Int. Cl.³ C08L 3/00
U.S. Cl. 106—213 20 Claims

1. A process for preparing a carrier-type starch adhesive comprising the steps of:

(a) preparing a mixture of first and second starch portions, a suitable alkali, and water to form a slurry, the first starch portion having a gelatinisation temperature at least about 2° C. lower than the second starch portion, said mixing comprising mixing the first starch portion in a weight ratio of from about 1 to 10 to about 1 to 50 relative the water, and the second starch portion in a weight ratio of from about 1 to 2 to about 1 to 8 relative the water, and the total starch portion in a weight ratio of from about 1 to 2 to about 1 to 4 relative the water; and

(c) causing gelatinisation of the starch portion having the lower gelatinisation temperature to thereby form a stable gelatinised carrier for the raw starch portion having the higher gelatinisation temperature, said causing of gelatinisation including maintaining the slurry at a temperature below the gelatinisation temperature of the second starch portion but at least as high as the gelatinisation temperature of the first starch portion.

14. A carrier type starch based adhesive prepared by the process comprising the steps of:

(a) preparing a mixture of first and second starch portions, a suitable alkali, and water to form a slurry, the first starch portion having a gelatinisation temperature at least about 2° C. lower than the second starch portion, said mixing comprising mixing the first starch portion in a weight ratio of from about 1 to 10 to about 1 to 50 relative the water, and the second starch portion in a weight ratio of from about 1 to 2 to about 1 to 8 relative the water, and the total starch portion in a weight ratio of from about 1 to 2 to about 1 to 4 relative the water; and

(b) causing gelatinisation of the starch portion having the lower gelatinisation temperature to thereby form a stable gelatinised carrier for the raw starch portion having the higher gelatinisation temperature, said causing of gelatinisation including maintaining the slurry at a temperature below the gelatinisation temperature of the second starch portion but at least as high as the gelatinisation temperature of the first starch portion.

4,359,342

SILICA REINFORCED RUBBER

Carl J. Stacy, and Jerold D. Wood, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 28, 1981, Ser. No. 229,211
Int. Cl.³ C09C 1/28
U.S. Cl. 523—216 6 Claims

1. Process to produce a silica reinforcing agent by acid precipitation of silica comprising

(a) precipitating silica from an aqueous silicate solution by adding acid thereto to form a silica comprising slurry,

(b) incorporating a reinforcing promoter into said slurry by adding said reinforcing promoter prior to, during or after step (a) but prior to any heat treatment or drying of the silica obtained in step (a) to obtain a promoted silica containing slurry, said promoter being defined as a chemical compound having at least one first molecular moiety that exhibits an affinity to silica or that is capable of attaching itself to the silica, and at least one second molecular moiety that is capable of forming a bond with a carbon atom,

(c) recovering said promoted silica from said slurry.

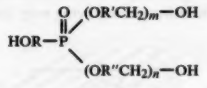
4,359,343

FILLED POLYOLEFIN COMPOSITIONS AND FILLER MATERIAL

Joseph Silberberg, Brooklyn, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 108,752, Dec. 31, 1979, Pat. No. 4,309,333.
This application Jul. 24, 1981, Ser. No. 286,509
Int. Cl.³ C08K 5/53, 9/04
U.S. Cl. 106—308 Q 4 Claims

1. A filler material which improves the thermal stability of polyolefin compositions containing it which comprises an inorganic filler and an effective amount for such improved thermal stability of a dipolyoxyalkylene hydroxyalkyl phosphonate having the formula



where R, R′ and R″ are independently C_1–C_4 alkyl and the sum of m and n is an integer from 2 to 10.

4,359,344

SALT REMOVAL FROM MG GRANULES

Edward J. Skach, Jr., Freeport, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Oct. 16, 1981, Ser. No. 312,051
Int. Cl.³ B08B 3/08
U.S. Cl. 134—2 11 Claims

1. A process for removing a salt coating from Mg particles, said process comprising

(a) leaching said salt coating from said Mg particles by contacting said particles with an alkaline aqueous wash solution at a pH of at least about 10 for a period of time sufficient to dissolve said salt coating,

(b) draining said aqueous wash from said Mg particles, and

(c) removing residual aqueous wash from said Mg particles by contacting said particles with a water-miscible, evaporatable, inert, non-aqueous liquid.

4,359,345

TRIVALENT CHROMIUM PASSIVATE SOLUTION AND PROCESS

Bento Da Fonte, Jr., Mt. Clemens, Mich., assignor to Occidental Chemical Corporation, Warren, Mich.

Filed Apr. 16, 1981, Ser. No. 254,699
Int. Cl.³ C23F 9/00, 7/26
U.S. Cl. 148—6.2 30 Claims

1. An aqueous acidic solution for treating receptive metal substrates to impart a chromate passivate film thereon comprising chromium ions substantially all of which are in the trivalent state, an acid, a solution compatible peroxide or persulfate oxidizing agent, iron ions in combination with at least one additional metal ion selected from the group consisting of cobalt, nickel, molybdenum, manganese, lanthanum, lanthanide mixture and mixtures thereof present in an effective amount to impart increased corrosion resistance to the treated substrate.

4,359,346

TRIVALENT CHROMIUM PASSIVATE SOLUTION AND PROCESS FOR YELLOW PASSIVATE FILM

Bento Da Fonte, Jr., Mt. Clemens, Mich., assignor to Occidental Chemical Corporation, Warren, Mich.

Filed Apr. 16, 1981, Ser. No. 254,700
Int. Cl.³ C23F 9/00, 7/26
U.S. Cl. 148—6.2 32 Claims

1. An aqueous acidic solution for treating receptive metal substrates to impart a chromate passivate film thereon comprising chromium ions substantially all of which are in the trivalent state, an acid, a solution compatible peroxide or persulfate oxidizing agent, and cerium ions present in an effective amount to impart increased corrosion resistance to the treated substrate.

4,359,347

CHROMIUM-FREE PASSIVATE SOLUTION AND PROCESS

Bento Da Fonte, Jr., Mt. Clemens, Mich., assignor to Occidental Chemical Corporation, Warren, Mich.

Filed Apr. 16, 1981, Ser. No. 254,728
Int. Cl.³ C23F 9/00, 7/00
U.S. Cl. 148—6.14 R 21 Claims

1. An aqueous acidic solution for treating recpetive metal substrates to impart a passivate film thereon comprising an acid, a solution compatible peroxide or persulfate oxidizing agent, and iron and cobalt ions present in an effective ammount to impart increased corrosion resistance to the treated substrate.

4,359,348

STABILIZED TRIVALENT CHROMIUM PASSIVATE COMPOSITION AND PROCESS

David E. Crotty, Highland Park, Mich., assignor to Occidental Chemical Corporation, Warren, Mich.

Filed Jun. 17, 1981, Ser. No. 274,601
Int. Cl.³ C23F 7/26
U.S. Cl. 148—6.16 50 Claims

1. An aqueous acidic solution for treating receptive metal substrates to impart a chromate passivate film thereon comprising chromion ions substantially all of which are present in the trivalent state and present in an amount effective to produce a chromate film, hydrogen ions to provide an acidic ammonium persulfate or alkali metal pH, a solution compatible peroxide or persulfate oxidizing agent, a stabilizing agent comprising a mixture of 1—hydroxy ethylidene—1,1 diphosphonic acid and citric acid as well as the bath soluble and compatible salts thereof present in an amount effective to reduce loss of the oxidizing agent and inhibit a rise in the pH of the solution, and at least one additional metal ion selected from the group consisting of iron, cobalt, nickel, molybdenum, manganese, aluminum, lanthanum, cerium, lanthanide mixture and mixtures thereof present in an amount effective to impart increased corrosion resistance to the treated substrate.

4,359,349

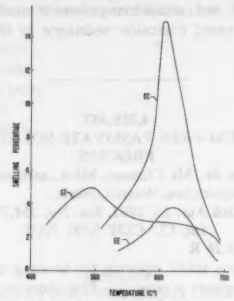
METHOD FOR HEAT TREATING IRON-NICKEL-CHROMIUM ALLOY

Howard F. Merrick, Suffern, N.Y., and Michael K. Korenko, Rockville, Md., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Continuation-in-part of Ser. No. 61,229, Jul. 27, 1979, abandoned. This application Apr. 3, 1980, Ser. No. 137,049
Int. Cl.³ C21D 7/14
U.S. Cl. 148—12.3 11 Claims

1. A method for heat treating an iron-nickel-chromium alloy consisting essentially of about 25% to 45% nickel, 10% to 16% chromium, 1.5% to 3% of an element selected from the group consisting of molybdenum and niobium, about 1% to 3% titanium, about 0.5% to 3.0% aluminum and the remainder substantially all iron; which method comprises the steps of heating the alloy to a temperature in the range of 1000° C. to 1100° C. for 30 seconds to 1 hour followed by a furnace-cool, cold-working the alloy 10% to 80%, heating the alloy to a

temperature of about 750° C. to 800° C. for 4–15 hours followed by an air-cool, and then heating the alloy to a temperature in the range of 650° C. to 700° C. for 2–20 hours followed by an air-cool.



4,359,350

HIGH POST-IRRADIATION DUCTILITY THERMOMECHANICAL TREATMENT FOR PRECIPITATION STRENGTHENED AUSTENITIC ALLOYS

James J. Laidler, Richland; Ronald R. Borisch, Kennewick, both of Wash., and Michael K. Korenko, Rockville, Md., assignors to The United States of America as represented by the Department of Energy, Washington, D.C.

Filed Mar. 27, 1981, Ser. No. 248,121
Int. Cl.³ C22F *1/10*; C21D *6/02*
U.S. Cl. 148—12.3 **3 Claims**

1. The method of improving the post-irradiation ductility of precipitation hardenable alloys, the steps comprising solution heat treating the alloys at a temperature within the range between about 950° C. and about 1150° C. and thereafter cold working the alloys to effect a reduction in cross-sectional area of between about 10% and about 60%.

4,359,351

PROTECTIVE ATMOSPHERE PROCESS FOR ANNEALING AND OR SPHEROIDIZING FERROUS METALS

Robert W. Levis, Breinigsville, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Oct. 23, 1979, Ser. No. 87,360
Int. Cl.³ C21D *1/48*
U.S. Cl. 148—16.7 **8 Claims**

1. In a method for spheroidizing a ferrous metal article by a combination of heating and cooling to produce a microstructure in the ferrous article exhibiting a rounded or globular form of carbide the improvement comprising heating and cooling said ferrous metal articles under an atmosphere prepared by forming a mixture of from 0.5 to 10 mole percent methanol, balance nitrogen and introducing said mixture into a furnace while said articles are heated and cooled to prevent removal of surface carbon from said ferrous articles.

4,359,352

NICKEL BASE SUPERALLOYS WHICH CONTAIN BORON AND HAVE BEEN PROCESSED BY A RAPID SOLIDIFICATION PROCESS

Ranjan Ray, Waltham, Mass.; Donald E. Polk, Washington, D.C., and Bill C. Giessen, Cambridge, Mass., assignors to Marko Materials, Inc., Watertown, Mass.

Filed Nov. 19, 1979, Ser. No. 95,382
Int. Cl.³ C22C *30/00*, *19/05*
U.S. Cl. 148—31 **22 Claims**

10. An iron-nickel base alloy obtained by adding 0.4–1.7 wt% boron to an alloy having a composition represented by $Fe_xNi_yM_aM''_bT_c$ where M is at least one element selected from the group consisting of titanium, aluminum, columbium, and tantalum and mixtures thereof, M'' is at least one element selected from the group consisting of chromium, cobalt, tungsten and molybdenum and mixtures thereof, and T is at least one element selected from the group consisting of carbon, hafnium, zirconium, vanadium, manganese, silicon and magnesium and mixtures thereof, where x, y, a, b and c are atomic percentages ranging from 20 to 65, 5 to 50, 7 to 20, 8 to 43 and 0.1 to 4, respectively, and where the sum of a, b and c is less than 50 and the molybdenum and tungsten content combined is in the range of 0 to 15 at%, said alloy being prepared from the melt thereof by a rapid solidification process characterized by cooling rates in the range of about 10^5 to 10^7 °C/sec. said alloy consisting of an ultrafine grain structure having an average grain size of less than about 2 microns comprised predominately of a solid solution phase having very low bend ductility.

4,359,353

POLYPEPTIDES AS CHEMICAL TAGGING MATERIALS

Paul H. Kydd, Lawrenceville, N.J., assignor to Hydrocarbon Research, Inc., Lawrenceville, N.J.

Filed May 18, 1981, Ser. No. 264,991
Int. Cl.³ C06B *45/00*
U.S. Cl. 149—2 **2 Claims**

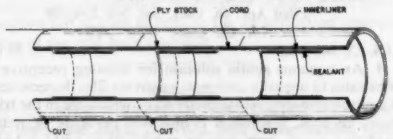
1. A composition comprising an explosive material and a polypeptide for retrospective identification of the explosive after detonation.

4,359,354

METHOD OF FORMING SELF-SEALING TIRE BODY COMPOSITE FOR TIRES

Georg G. A. Böhm, Akron, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Mar. 3, 1980, Ser. No. 126,513
Int. Cl.³ B60C *21/08*
U.S. Cl. 156—115 **17 Claims**



1. A method for forming a self-sealing tire with a seamless tubular innerliner layer and a seamless sealant layer therein, comprising the steps of:

extruding at least one seamless tubular innerliner layer,

extruding at least one tacky seamless sealant layer of a finite length in a longitudinal direction,

extruding said seamless sealant layer about the entire circumference of said tubular innerliner layer,

simultaneously coextruding said tubular innerliner layer and said sealant layer,

contiguously contacting said innerliner layer and said sealant layer, and

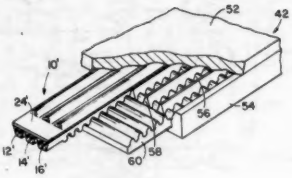
extruding said contiguous sealant layer and said innerliner layer into a spliceless tubular self-sealing composite at a diameter so that a tire can be made therefrom.

4,359,355

V-BELT

Alfred L. Stecklein, and Jerome M. Daugherty, both of Littleton, Colo., assignors to The Gates Rubber Company, Denver, Colo.

Division of Ser. No. 111,419, Jan. 11, 1980, Pat. No. 4,332,576.
This application Jun. 29, 1981, Ser. No. 278,305
Int. Cl.³ B29H 7/22
U.S. Cl. 156—138 22 Claims



1. A method for forming a molded notch elastomeric endless power transmission belt in stepwise manner, comprising:

forming a plurality of uncured belt segments individually having a load carrying section sandwiched between a tension and a compression section;

adjacently disposing the belt segments, and interconnecting the belt segments with a tie band to form a belt preform;

disposing the belt preform between juxtaposed portions of an open-ended mold having rigid continuously curved transverse notches and rigid longitudinal ribs separating the belt segments, and pressing the mold portions against the belt preform and heating to cure a section of the belt with notches mold formed in the compression section of adjacent belt segments; and

advancing the belt preform successively to dispose an uncured section of the belt between the mold portions such that at least one notch mold formed from a previously cured belt section registers in a transverse mold notch, repeating this step as necessary until the belt is cured along its full perimeter.

6. A method for simultaneously forming a plurality of single strand molded notch endless power transmission belts, comprising:

forming a plurality of uncured belt segments individually having a load carrying section sandwiched between a tension and a compression section;

adjacently disposing the belt segments between juxtaposed portions of an open-ended multi-cavity mold having rigid continuously curved transverse notches and rigid longitudinal ribs separating the belt segments, and pressing the mold portions against the belt segments and heating to cure a section of each of the belt segments with notches mold formed in the compression section of adjacent belt segments; and

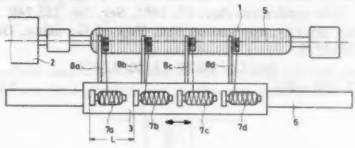
advancing the plurality of belt segments together successively to dispose an uncured section of each of the belt segments between the mold portions such that at least one notch mold formed from a previously cured belt section of each belt segment registers in a transverse mold notch, repeating this step as necessary until the belt segments are cured along their full perimeters.

4,359,356

METHOD AND APPARATUS FOR PRODUCTION OF FIBER REINFORCED WOUND BODIES

Heinz Kornbichler, Königstein; Bruno Sartor, Inden-Pier, and Klaus Rode, Jülich, all of Fed. Rep. of Germany, assignors to Uranit Uran-Isotopentrennungsgesellschaft mbH, Jülich, Fed. Rep. of Germany

Filed Aug. 7, 1981, Ser. No. 291,063
Claims priority, application Fed. Rep. of Germany, Aug. 7, 1980, 3029890
Int. Cl.³ B65H 81/00
U.S. Cl. 156—175 7 Claims



1. In a method for producing fiber reinforced axially symmetrical wound bodies each of predetermined length, by winding fibers or strands of fibers saturated with a hardenable plastic onto a mandrel, alternating layers of circumferential windings and layers with criss-cross windings being placed on top of one another, and, after hardening of the plastic, removing the mandrel, the improvement wherein said step of winding is carried out to simultaneously produce a plurality of identical wound bodies axially juxtaposed on the mandrel and comprises: winding at least one circumferential layer by attaching a plurality of fibers or strands corresponding to the number of bodies to be wound at axially spaced locations along the mandrel and winding all of the fibers or strands simultaneously on the mandrel with mutual axial spacings approximately corresponding to, or somewhat greater than, the length of each wound body; winding at least one criss-cross winding layer by attaching at least one fiber or strand to the mandrel and winding the fiber or strand over the combined length of the juxtaposed layers of circumferential windings along the mandrel; and dividing the completed wound layers into individual sections forming the respective wound bodies which are then removed from the mandrel.

4. In apparatus including a mandrel provided with a drive and two separate carriages movable parallel to the longitudinal axis of the mandrel, for producing fiber reinforced axially symmetrical wound bodies each of predetermined length, by winding fibers or strands of fibers saturated with a hardenable plastic onto the mandrel, alternating layers of circumferential windings and layers with criss-cross windings being placed on top of one another, and, after hardening of the plastic removing the mandrel, the improvement wherein said apparatus is arranged to simultaneously produce a plurality of identical wound bodies, axially juxtaposed on said mandrel; one said carriage comprises a plurality of fiber supply devices equal in number to the number of wound bodies to be produced and said one carriage is mounted to be movable parallel to the longitudinal axis of said mandrel through a distance approximately equal to the axial length of each wound body, said one carriage serving to produce circumferential layers by attachment of a plurality of fibers or strands supplied by said supply devices and corresponding to the number of bodies to be wound at axially spaced locations along the mandrel and winding all of the fibers or strands simultaneously on said mandrel with mutual axial spacings approximately corresponding to, or somewhat greater than, the length of each wound body; and the other said carriage comprises a single fiber supply device arranged to surround said mandrel and provided with at least one supply roller system arranged to supply a fiber or strand, and said other carriage is mounted to be movable parallel to the longitudinal axis of said mandrel through a distance corresponding to the combined axial lengths of all of the wound

bodies, said other carriage serving to produce criss-cross winding layers by attachment of the fiber or strand supplied by said supply roller system and winding of that fiber or strand over the axial extent of said mandrel corresponding to the combined axial lengths of all of the wound bodies.

4,359,357

METHOD OF MAKING TAMPON WITH A NON-WOVEN WRAP

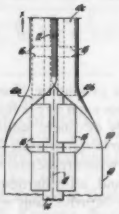
Axel Friese, Wuppertal, Fed. Rep. of Germany, assignor to Dr. Carl Hahn, G.m.b.H, Dusseldorf, Fed. Rep. of Germany

Division of Ser. No. 99,771, Dec. 3, 1979, Pat. No. 4,294,253. This application Apr. 17, 1981, Ser. No. 255,149

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1978, 2855179

Int. Cl.³ B32B *31/10, 31/18*

U.S. Cl. 156—201 **5 Claims**



1. A method of making catamenial tampons comprising:

depositing absorbent material in successive longitudinal intervals upon a longitudinally extending web of liquid permeable material having longitudinally extending side edges;

folding the edges of the web over said absorbent material and sealing the edges together to form a sleeve containing said absorbent material;

severing and transversely sealing said folded web at said longitudinal intervals to form flat cushions of absorbent material enveloped by said web, said transverse seals constituting front and rear edges of said flat cushions and said cushions each having a top face;

folding each of said cushions into longitudinally successive sections consisting of a front section defined by said front edge and a first fold line, a central section defined by said first fold line and a second fold line and a rear section defined by said second fold line and said rear edge, said front and rear sections being folded onto the top face of said central section about said front and rear fold lines, respectively, with said front and rear edges facing one another;

fastening a withdrawal cord around each of said folded cushions and dividing said cushion therewith into two lateral sections;

folding the two lateral sections toward each other about said withdrawal cord with the folded front and rear sections facing each other; and compressing said folded cushions into a cylindrical tampon shape.

4,359,358

IN-STORE COUPON AND METHODS

James C. Hattemer, Cincinnati, Ohio, assignor to Graphic Resources, Inc., Cincinnati, Ohio

Division of Ser. No. 130,629, Mar. 17, 1980, Pat. No. 4,281,762. This application Jul. 24, 1981, Ser. No. 286,645

Int. Cl.³ B32B *31/00;* **B31D** *1/02*

U.S. Cl. 156—248 **4 Claims**

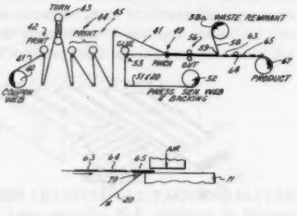
1. A method of manufacturing removable in-store coupons comprising the steps of:

passing a first web of indeterminate length through at least one printing station; said web having a plurality of distinct, and as yet undefined, coupon areas thereon;

printing indicia on said web on at least one side thereof and in at least central portions of said areas, said areas also including side portions;

passing a second laminated web, comprising a backing web and a base web held thereon by pressure sensitive adhesive, through a glue station and applying glue to said base web in glue areas to be correlated with said side portions of said coupon areas;

joining said webs, said glue areas of said base web corresponding and contacting said side portions of said coupon areas and adhering thereto;



cutting said first web and said base web co-extensively to form distinct, defined coupons corresponding to said undefined coupon areas, said coupons having an upper coupon sheet; formed from said first web, secured at said side portions to an underlying base sheet formed from said base web;

providing lines of weakness between side portions and central portions of said upper coupon sheet;

removing from said backing web remnant portions of said first web and said base web outside of distinct coupons; and

rolling said backing web into a supply roll with said distinct coupons thereon, a central portion of said upper coupon sheet being detachable from said side portions thereof.

4,359,359

PRODUCTION OF POLYURETHANE EMBEDDING MATERIALS AND USE THEREOF

Klaus Gerlach, Obernau, and Gerhard Wick, Obernburg, both of Fed. Rep. of Germany, assignors to Akzo N.V., Arnhem, Netherlands

Division of Ser. No. 23,948, Mar. 26, 1979, Pat. No. 4,272,377. This application Jan. 5, 1981, Ser. No. 222,379

Claims priority, application Fed. Rep. of Germany, Mar. 25, 1978, 2813197; Dec. 21, 1978, 2855243; Japan, Feb. 26, 1979, 2907501

Int. Cl.³ C08G *18/32, 18/30*

U.S. Cl. 156—294 **20 Claims**

1. A process for the production of a polyurethane embedding material which comprises reacting an aromatic diisocyanate in stoichiometric excess with a mixture consisting essentially of castor oil and trimethylolpropane to form a flowable preadduct containing unreacted isocyanate groups and subsequently hardening said preadduct by intimately admixing therewith as a cross-linking agent

(a) castor oil, or

(b) a mixture of castor oil and trimethylolpropane in an amount sufficient to cross-link the prepolymer through a majority of its unreacted isocyanate groups.

18. In a process of applying a polyurethane embedding material in supporting relationship to a porous membrane wherein a preadduct of the polyurethane embedding material containing a cross-linking agent is applied to said porous membrane and is then cross-linked and firmly adhered to said membrane, the improvement comprising employing as the polyure-

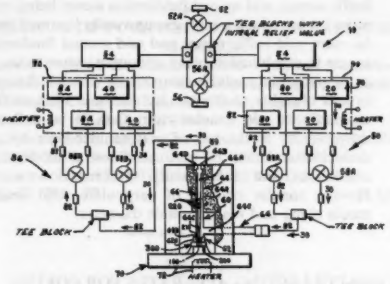
thane embedding material the product of the process of claim 1.

4,359,360

APPARATUS FOR SELECTIVELY JET ETCHING A PLASTIC ENCAPSULATING AN ARTICLE

Herbert M. Harris, Duluth, and Gerald N. Hill, Marietta, both of Ga., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Dec. 10, 1981, Ser. No. 329,459
Int. Cl.³ B41C *1/00*; B44F *1/22*; C03C *15/00, 25/06*
U.S. Cl. 156—345 **10 Claims**



1. Apparatus for selectively jet etching a material which is encapsulating an article, comprising:

a. at least one source of a heated etchant;

b. at least one receptacle in communication with said source of heated etchant for receiving and storing a flow of said heated etchant;

c. means for controlling said flow of heated etchant from said source thereof to said receptacle, with this means interconnecting said source and said receptacle;

d. means connected to said etchant flow controlling means, for causing a high velocity jet flow of said flowing heated etchant to spray against a preselected portion of said material encapsulating said article; and

e. means for removing said etchant, said encapsulant dissolved by said etchant, and insoluble particles of said encapsulant which result from jet spraying said preselected portion of said encapsulant, with this means operably connected to said jet spray means and to said etchant flow controlling means;

whereby said preselected portion of said material is de-encapsulated.

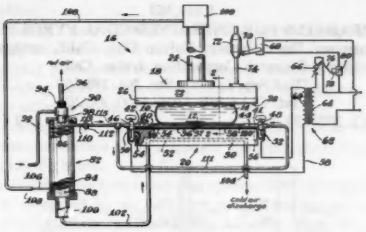
4,359,361

IMPULSE SEALER

Donald R. Wright, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 690,486, May 27, 1976, abandoned. This application Jan. 30, 1978, Ser. No. 873,469
Int. Cl.³ B65B *51/14, 51/32*
U.S. Cl. 156—497 **11 Claims**

1. An apparatus wherein superposed thermoplastic, heat sealable webs are passed between opposed sealing jaw assemblies, one of which is a back-up jaw assembly and the other of which is a heat applying jaw assembly, the heat applying jaw assembly including an elongated sealing and cutting element which is workable against a back-up jaw assembly, means to heat the sealing and cutting element, the improvement which comprises at least one of said jaw assemblies defining an elongated cooling vein having ends closed to the atmosphere and positioned generally immediately adjacent the working face thereof, and which is positioned generally contiguous to and along said sealing and cutting element at least in the closed jaw position, means communicating with said cooling vein adjacent its ends to furnish a stream of pressurized gas thereto flowing from the ends towards the center of the cooling vein, means to cool the stream of pressurized gas prior to said cooling vein, said cooling vein including venting means located



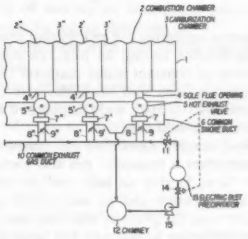
intermediate said ends to exhaust the cooling gas and provide a more even heat gradient across the seal area of said webs.

4,359,362

METHOD AND APPARATUS FOR PREVENTING GENERATION OF SMOKE FROM COKE OVENS

Yoshihiro Omae, Kitakyushu, Japan, assignor to Mitsubishi Kasei Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 22, 1981, Ser. No. 227,495
Claims priority, application Japan, Jan. 28, 1980, 55-8477
Int. Cl.³ C10B *5/00*
U.S. Cl. 201—1 **9 Claims**



1. A method of preventing generation of smoke from a coke oven into which raw material coal is to be loaded of the type including a plurality of juxtaposed and alternately disposed combustion chambers and carbonization chambers so that heat generated in the combustion chamber is transmitted to adjacent carbonization chambers through partition walls therebetween, each of the combustion chambers being provided with a flue exit opening and means for exhausting exhaust gas from respective combustion chambers through a chimney via each of said flue exit openings, hot exhaust valve means connected to said flue exit openings, a common exhaust gas duct connected to said chimney, a dust collector disposed in said exhaust gas duct, and a common smoke duct connected to said chimney, shut off valve means connected between one end of said common exhaust gas duct and the hot exhaust valve means of respective combustion chambers, which comprises:

driving out the exhaust gas from the combustion chambers on opposite sides of one of said carbonization chambers into which the raw material coal has been loaded through the flue exit openings, said hot exhaust valve means associated with said one combustion chamber and said common smoke duct to said chimney so as to bypass said exhaust gas duct and said dust collector;

shutting off a path of the exhaust gas flow from said hot exhaust valve means to said common smoke duct; and

passing said exhaust gas through said common exhaust gas

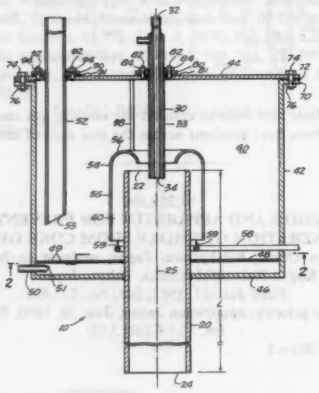
duct and said dust collector to said chimney so as to by-pass said common smoke duct.

4,359,363

APPARATUS FOR ENTRAINED COAL PYROLYSIS

Kandaswamy Durai-Swamy, Culver City, Calif., assignor to Occidental Research Corporation, Irvine, Calif.

Filed Sep. 2, 1981, Ser. No. 298,566
Int. Cl.³ C10B *1/04, 3/00, 49/20*
U.S. Cl. 202—99 **2 Claims**



1. An apparatus operative for pyrolyzing coals comprising:

a. a conduit reactor having an inlet, an outlet, a circular cross-section of constant inside diameter over a predetermined distance from said inlet, the axis of said reactor being vertically oriented, and the plane of said inlet being perpendicular to said axis;

b. a first feed conduit operative for conveying a mixture which comprises a transport gas and particulate coal in turbulent flow, having an inlet and an outlet, having a circular cross-section and an axis which coincides with said reactor axis, the plane of said first feed conduit outlet being perpendicular to said axis and being in communication with said reactor inlet in such a way that the plane of said first feed conduit outlet is not above the plane of said reactor inlet, said reactor inside diameter being at least about three times the outside diameter of said first feed conduit outlet; and

c. a fluidization chamber, operative for fluidizing a mixture of particulate solid heating media with a fluidizing gas, said chamber being in communication with said reactor inlet, which comprises

i. a cylindrical outer shell having an inside diameter which is at least about two times the outside diameter of said reactor,

ii. a top cover which is above the plane of said reactor inlet and which is fastened to the upper part of said shell, said first feed conduit passing through, and being fastened to, said top cover,

iii. a bottom cover which is below the plane of said reactor inlet and which is fastened to the lower part of said shell, said reactor passing through, and being fastened to, said bottom cover,

iv. a first fluidization means operative for fluidizing particulate solid heating media in said chamber,

v. a second feed conduit having an outlet, said second feed conduit being operative for introducing a stream of particulate solid heating media into said chamber, said second feed conduit being radially displaced from said reactor and said second feed conduit outlet being below the plane of said reactor inlet,

vi. an annular baffle means having an axis which coincides with said reactor axis, said baffle means having a side wall and a deflector, said side wall having an inside diameter which is greater than said reactor outside diameter, said side wall extending above and below the plane of said reactor inlet, said side wall and said reactor in combination forming an annular riser, said deflector being above the plane of said reactor inlet and extending from said side wall to a point slightly radially inwardly of said reactor inside diameter, and

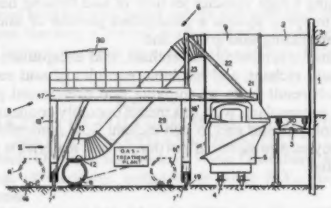
vii. a second fluidization means having a plurality of outlets which are located radially inwardly of said side wall and radially outwardly of said reactor outside diameter but entirely below the lower extremity of said annular baffle means, said second fluidization means being operative for introducing a lift gas upwardly into said annular riser, said baffle means and said second fluidization means in combination being operative, when in use, to cause particulate solid heating media which is fluidized in said chamber to flow under said side wall, to flow upwardly in said annular riser, then to be deflected downwardly at the top of said annular riser by said deflector, and then to be formed into a substantially continuous and substantially uniform downwardly flowing annular column of particulate solid heating media along said reactor inside diameter.

4,359,364

GAS-COLLECTING APPARATUS FOR COKING INSTALLATION

Karl Gregor, Bochum, and Karl Feldhaus, Gelsenkirchen, both of Fed. Rep. of Germany, assignors to Gewerkschaft Schalker Eisenhutte, Gelsenkirchen, Fed. Rep. of Germany

Filed Mar. 3, 1981, Ser. No. 240,247
Claims priority, application Fed. Rep. of Germany, Mar. 8, 1980, 3009021
Int. Cl.³ C10B *39/00, 39/12, 39/18, 41/00*
U.S. Cl. 202—230 **12 Claims**



1. In combination with a coking installation having:

a coking chamber having a coke side opening above a bench level in turn above ground level;

a coke-guide track at said bench level;

a coke guide displaceable along said track and alignable with said coke side opening of said chamber;

a ground-level quenching-car track; and

a quenching car displaceable at ground level along said quenching-car track to receive coke pushed from said chamber through said guide;

a gas-collecting apparatus comprising:

an outer track supported at said ground level and including a pair of rails at least one of which is at said ground level, said coke-guide and quenching-car tracks lying between said pair of rails and said coking chamber;

a portal support displaceable along said outer track and including a pair of legs each provided with a wheel and a horizontal stage interconnecting said legs, said wheels riding on said rails;

a gas-collecting hood supported on said support over said quenching car; and

gas-treatment means connected to said hood for aspirating gases generated at said quenching car, said gas-treatment means including:

a stationary conduit extending along said outer track under said stage,

a movable conduit carried on said support and connected at one end to said hood and having another end, and

means for connecting said other end of said movable conduit to said stationary conduit at any of a multiplicity of locations therealong.

4,359,365

METHOD OF PURIFICATION OF β-PHENYLETHYL ALCOHOL

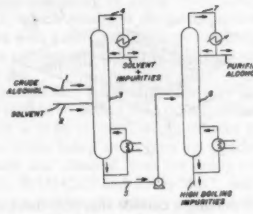
Takashi Deguchi, Kusatsu; Masahiro Usui, and Yasuhiko Higashio, both of Ichihara, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Oct. 7, 1980, Ser. No. 194,859

Claims priority, application Japan, Oct. 16, 1979, 54-133764; Nov. 28, 1979, 54-154752; Jun. 30, 1980, 55-89723

Int. Cl.³ B01D *3/36, 3/40;* **C07C** *29/80*

U.S. Cl. 203—55 **11 Claims**



1. A method of purification of crude β-phenylethyl alcohol, which comprises: introducing a mixture of crude β-phenylethyl alcohol and a solvent selected from the group consisting of water, glycerine, an alkylene glycol, a polyalkylene glycol, an alkylene glycol monoalkyl ether, a polyalkylene glycol monoalkyl ether and mixtures thereof into a distillation column; and

distilling off impurities from the top of said column and removing β-phenylethyl alcohol from the bottom of said column.

4,359,366

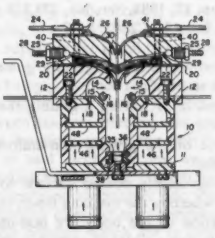
PLATING CELL WITH CONTINUOUS CATHODE CONTACT AND METHOD

Charles D. Eidschun, Clearwater, Fla., assignor to Micro-Plate, Inc.

Filed Jul. 27, 1981, Ser. No. 287,248

Int. Cl.³ C25D *5/02, 17/28*

U.S. Cl. 204—15 **10 Claims**



1. A method of plating connector contact tabs on a printed circuit board which printed circuit board does not have a plating buss or plating bar comprising the steps of:

orienting the board for continuous movement in a vertical plane,

providing a cathode brush chamber in surrounding relationship to a cathode brush which can be energized for supplying plating current to the printed circuit board,

providing shields both above and below the cathode brush to define a brush chamber,

providing a reverse flow chamber for electrolyte in open communication with a sparger immediately beneath the cathode brush,

and flowing electrolyte into the reverse flow chamber which is energized by an anode to permit the plating of that portion of the printed circuit board beneath the lower shield defining the cathode chamber and the lower portion of the printed circuit board.

4,359,367

SILICON-BASED SEMICONDUCTOR DEVICES

Stefan Zukotynski, Thornhill; Ki B. Ma, Toronto; John Perz, Agincourt; Andrzej Szadkowski, and Ben-Gur Yacobi, both of Toronto, all of Canada, assignors to Governing Council of the University of Toronto, Toronto, Canada

Filed Jun. 25, 1980, Ser. No. 162,846

Int. Cl.³ C25D *7/12, 5/50*

U.S. Cl. 204—37 R **12 Claims**

1. A method of making an amorphous-silicon-based semiconductor device including the steps of:

(a) preparing a thicker hydrogen-containing substrate layer of a material,

(b) depositing a thinner layer of amorphous silicon on the hydrogen-containing layer so that the silicon layer can receive hydrogen released therefrom, and

(c) hydrogenating the said thinner layer of amorphous silicon.

4,359,368

DEUTERIUM EXCHANGE BETWEEN HYDROFLUOROCARBONS AND AMINES

Willis B. Hammond, Chatham, N.J.; Jacob Bigeleisen, St. James, N.Y., and Sam A. Tuccio, Morris Plains, N.J., assignors to Allied Corporation, Morristown, N.J.

Filed Feb. 25, 1980, Ser. No. 124,486

Int. Cl.³ C01B *3/02;* **C07F** *13/00*

U.S. Cl. 204—158 R **16 Claims**

8. A process for obtaining a compound enriched in deuterium which comprises the known method of:

(a) exposing a gaseous hydrofluorocarbon to infrared laser radiation of a predetermined frequency to selectively cause a chemical reaction involving hydrofluorocarbon molecules containing deuterium without substantially affecting hydrofluorocarbon molecules not containing deuterium, thereby producing, as reaction products, a compound enriched in deuterium and hydrofluorocarbon depleted in deuterium; combined with a new method, which comprises:

(b) enriching the deuterium content of the depleted hydrofluorocarbon by contacting the depleted hydrofluorocarbon with an alkali metal amide and an amine having a concentration of deuterium at least that which will yield an increase in deuterium concentration of the hydrofluorocarbon upon equilibration, whereby the amine becomes depleted in deuterium.

4,359,369
PHOTOCURABLE ORGANOPOLYSILOXANE COMPOSITIONS

Minoru Takamizawa, Annaka; Fumio Okada, Takasaki; Yasuaki Hara, Annaka; Hisashi Aoki, Annaka, and Yoshio Inoue, Annaka, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Aug. 25, 1980, Ser. No. 180,934

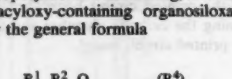
Claims priority, application Japan, Aug. 29, 1979, 54-110136; Nov. 13, 1979, 54-146727; Dec. 13, 1979, 54-162328

Int. Cl.³ G03C *1/68*; C08G *77/00*

U.S. Cl. 204—159.13 **11 Claims**

1. A photocurable organopolysiloxane composition which comprises

(a) an organopolysiloxane containing, in a molecule, at least one thioacyloxy-containing organosiloxane unit represented by the general formula



wherein R^1 is a hydrogen atom or a halogen-substituted or unsubstituted phenyl group, R^2 is a hydrogen atom or an alkyl group having from 1 to 4 carbon atoms, R^3 is a halogen-substituted or unsubstituted divalent hydrocarbon group, R^4 is a halogen-substituted or unsubstituted monovalent hydrocarbon group and a is zero, 1 or 2, and

(b) an effective amount of a photosensitizer.

4,359,370
CURABLE EPOXY-VINYL ESTER COMPOSITIONS

Harold E. De La Mare, and Paul D. Jones, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Nov. 24, 1980, Ser. No. 209,626

Int. Cl.³ C08G *59/40*, *59/42*; B03B *5/60*

U.S. Cl. 204—159.15 **6 Claims**

1. A heat-curable, tack free composition exhibiting excellent shelf life consisting essentially of (1) a partial vinyl ester containing hydroxyl groups prepared by reacting from about 0.50 to about 0.85 chemical equivalents of an ethylenically unsaturated monocarboxylic acid with a chemical equivalent amount of an epoxy compound containing more than one vicinal-epoxy group and (2) a catalytic amount of an adduct of an imidazole compound and a glycidyl ether of 2,2-bis(4-hydroxyphenyl)-propane, said blend being exposed to UV radiation in an amount to effect a tack-free, B-stage partial cure.

4,359,371
PROCESS FOR PREPARING BROMINE- AND FLUORINE-CONTAINING HALOGENATED HYDROCARBONS

Horst Böhm; Werner Rudolph, and Joachim Massonne, all of Hanover, Fed. Rep. of Germany, assignors to Kali-Chemie AG, Hanover, Fed. Rep. of Germany

Continuation of Ser. No. 810,564, Jun. 27, 1977, abandoned. This application Dec. 1, 1980, Ser. No. 211,922

Claims priority, application Fed. Rep. of Germany, Jul. 2, 1976, 2629775

Int. Cl.³ C07C *17/20*

U.S. Cl. 204—163 R **10 Claims**

1. A process for brominating fluorine-containing halogenated hydrocarbons which comprises the step of subjecting a vapor phase mixture comprising at least one halogenated fluorohydrocarbon compound selected from

CHF_2Cl and CHF_3

and bromine to irradiation with light having a wave-length of from about 250 nm to about 600 nm in the presence of an active amount of chlorine, not exceeding about 2 moles per mole of bromine at a reaction temperature below 200° C. which is sufficient for substituting the hydrogen in said halogenated fluorocarbon compound by bromine and at a contact time of between about 1.5 and 7 seconds.

4,359,372
METHOD FOR MAKING A CARBIDE THIN FILM THERMISTOR

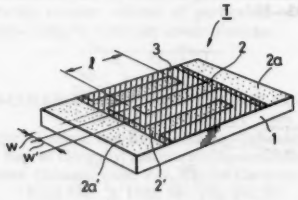
Takeshi Nagai; Kazushi Yamamoto, and Ikuo Kobayashi, all of Nara, Japan, assignors to Matsushita Electric Industrial Company, Limited, Osaka, Japan

Filed Oct. 10, 1980, Ser. No. 196,011

Claims priority, application Japan, Oct. 11, 1979, 54-131474; Nov. 20, 1979, 54-151031; Jun. 23, 1980, 55-85553; Jun. 23, 1980, 55-85541

Int. Cl.³ C23C *15/00*

U.S. Cl. 204—192 F **25 Claims**



1. A method for making a carbide thin film thermistor comprising:

providing an insulating substrate;

forming at least one pair of electroconductive electrodes on said insulating substrate in a desired pattern, the electrodes being electrically insulated from each other; and

forming a resistive carbide film on said insulating substrate and said at least one pair of electroconductive electrodes, while leaving part of the electrodes exposed for external connections, by a sputtering technique in which a carbide target material selected from the group consisting of SiC and B_4C is sputtered in an inert gas atmosphere containing an impurity gas selected from the group consisting of O_2, N_2, CO, CO_2, air and a mixture thereof.

4,359,373
METHOD OF FORMATION OF A BLAZED GRATING

Jacob M. Hammer, Lawrenceville, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jun. 15, 1981, Ser. No. 273,324

Int. Cl.³ C23C *15/00*

U.S. Cl. 204—192 E **5 Claims**

1. A method of forming a blazed grating in a surface of a body comprising the steps of:

forming a patterned layer having a grating therein on the surface of the body;

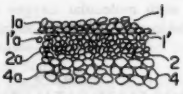
coating the surface of the grating non-uniformly with a masking layer; and

exposing the non-uniformly coated surface to a material removal means whereby the masking layer, the patterned layer and a portion of the body are non-uniformly removed thereby forming a blazed grating in the surface of the body.

4,359,374
OXYGEN SENSOR

Hiromi Sano, Nagoya; Masatosi Suzuki, and Masaya Fujimoto, both of Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Continuation of Ser. No. 92,038, Nov. 7, 1979, abandoned, which is a continuation of Ser. No. 889,503, Mar. 23, 1978, abandoned.
This application Feb. 4, 1981, Ser. No. 231,318
Int. Cl.[3] G01N *27/58*
U.S. Cl. 204—195 S 11 Claims



1. An oxygen sensor for detecting an oxygen concentration in an exhaust gas from an internal combustion engine of an automobile, said sensor comprising:

a solid oxygen concentration sensing element made of an oxygen ion conductive metal oxide mixture selected from a group consisting of ZrO_2-Y_2O_3, CrO_2-CaO and ZrO_2-MgO, which produces an electromotive force in accordance with a difference between an oxygen concentration in the exhaust gas and an oxygen concentration in a reference gas;

a first porous film made of a refractory metal oxide formed on a surface of said oxygen concentration sensing element which is to be exposed to the exhaust gas said refractory metal oxide being an oxygen ion conducting metal oxide mixture and selected from the group consisting of ZrO_2-Y_2O_3, ZrO_2-CaO and ZrO_2-MgO, said first porous film having a porous, chemically etched surface upon which a first electrode is formed;

a first electrode formed on said first porous film such that component grains of said first electrode penetrate into said first porous film, said first electrode being catalytically active;

a second porous film formed on said first electrode for protecting said first electrode from the exhaust gas; and

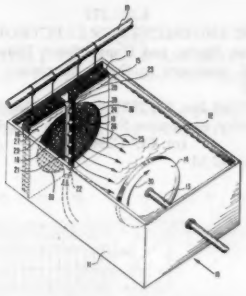
a second electrode formed on the opposite surface of said oxygen concentration sensing element.

4,359,375
ANODE ASSEMBLY FOR ELECTROFORMING RECORD MATRIXES

Kobert R. Smith, Carmel Valley, Calif., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 9, 1981, Ser. No. 328,833
Int. Cl.[3] C25D *17/00, 21/10*
U.S. Cl. 204—212 6 Claims

1. In an electroforming apparatus used for the formation of metal replicas on record matrixes wherein the apparatus includes a revolvable cathode head on which a matrix to be replicated is mounted, an anode assembly positioned in an opposing relationship to the revolvable cathode head and a circulatable supply of electrolyte, the improved anode assembly comprising in combination: a bifurcated holding means for receiving a supply of the metal to be electroformed, said holding means being comprised of first and second receptacles, said receptacles being positioned relative to each other in a vertical, side-by-side relationship, with a separation of a predetermined width between said receptacles; said anode assembly further including a manifold means for distributing the electrolyte circulated in said electroforming apparatus, said manifold means including an elongated conduit having an inlet port for receiving circulating electrolyte into the interior thereof and having a plurality of outlet nozzle means positioned along the length of the conduit which are in communication with the interior of the conduit, said manifold having a width of approximately that of said predetermined width and being positioned between the first and second receptacles with the outlet nozzle means directed towards the revolvable cathode head; said anode assembly further including first and second shield members positioned adjacent to the first and second receptacles, respectively, and being positioned between the revolvable cathode head and the first and second receptacles, said shield members covering the entire area of each of the receptacles except for a chordal-shaped section thereof such that the chordal-shaped section of the first and second shield members taken

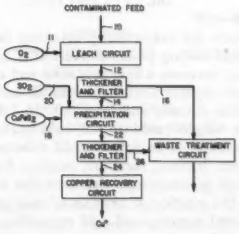


together with the width of the separation constitute a circular opening of a given diameter, said given diameter being of a size sufficient to focus the electroforming forces produced during electroforming from the anode assembly to the revolvable cathode head; whereby when a matrix is mounted on the revolvable cathode head and an electrolyte is circulated through the electroforming apparatus for electroforming a replica on the matrix, the electrolyte is directed toward and flows over the surface of the revolving matrix and the electroforming forces are simultaneously focused towards the matrix, thereby improving the quality of the replica electroformed thereon.

4,359,376
RECOVERING COPPER FROM A COPPER-BEARING SOURCE

Frank A. Baczek, Sandy; Bruce C. Wojcik, Kearns; Alexander A. Jueschke; Daniel M. Lewis, both of Salt Lake City; Jack C. Otto, Magna, and Lawrence L. Tuttle, Sandy, all of Utah, assignors to Envirotech Corporation

Division of Ser. No. 87,860, Jan. 23, 1980, Pat. No. 4,290,865.
This application May 11, 1981, Ser. No. 262,373
The portion of the term of this patent subsequent to Sep. 22, 1998, has been disclaimed.
Int. Cl.[3] C25C *7/00*
U.S. Cl. 204—242 6 Claims



1. An apparatus for recovering copper from a contaminated copper-bearing source, comprising:

a. means forming a multi-stage countercurrent leach circuit which utilizes an acidic leach solution to produce a liquor

containing dissolved copper, said circuit having a first stage to which said copper-bearing source is introduced and a final stage wherein the leach solution contains greater than about 150 gpl sulfuric acid;

b. means forming a precipitation circuit wherein said liquor is reacted with chalcopyrite solids and sulfur dioxide to precipitate dissolved copper from said liquor as simple copper sulfides; and

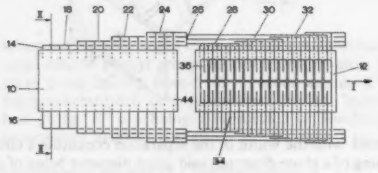
c. means forming a copper recovery circuit for recovering copper from said simple copper sulfides.

4,359,377

BUSBAR ARRANGEMENT FOR ELECTROLYTIC CELLS

Jean M. Blanc, Sierre, and Hans Pfister, Dübendorf, both of Switzerland, assignors to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Jan. 19, 1981, Ser. No. 226,062
Claims priority, application Switzerland, Feb. 1, 1980, 812/80
Int. Cl.³ C25C *3/16*
U.S. Cl. 204—243 M 10 Claims



1. Arrangement of busbars for conducting direct electric current from the cathode bar ends of a longitudinally disposed electrolytic cell to the anodes of the next cell which comprises: first busbars running along a long side of a first cell; flexible strips connecting in groups a plurality of cathode bar ends of said first cell to said first busbars; an equipotential electrical connection between the last cathode bar of the first cell and the first anode of the next cell; second busbars starting from said equipotential connection running along the long side of the next cell; and flexible strips connecting each anode in the next cell to said second busbars, whereby an arrangement of busbars is provided which uses less metallic busbar material, obtains smaller losses in electrical energy and diminishes deleterious magnetic effects.

4,359,378

CATALYTIC CRACKING PROCESS FOR IMPROVED OCTANE

John W. Scott, Ross, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 30,484, Apr. 16, 1979, abandoned. This application Feb. 15, 1980, Ser. No. 121,934
Int. Cl.³ C10G *11/05*
U.S. Cl. 208—120 14 Claims

1. A process for catalytically cracking feed hydrocarbons having normal boiling points above 220° C., comprising:

(a) cycling between a reaction zone and catalyst regeneration zone a particulate solid catalyst comprising a zeolite crystalline silicate, and from 0.01 to 1,000 parts per million, by weight based on said catalyst, of an active metal or compound of an active metal selected from platinum, palladium, iridium, rhodium, osmium, ruthenium copper, and their mixtures calculated as the element, disposed within the interior of crystals of said crystalline silicate, the crystal structure of said crystalline silicate defining substantially uniform pore openings with maximum diameters of from 5.5 to 7.0 Angstrom units and substantially uniform cages with maximum cage dimension of from 5.5 to 7.0 Angstrom units, whereby contact between said feed hydrocarbons and said active metal is restricted;

(b) forming cracked hydrocarbons having normal boiling points below 220° C. and depositing coke on said particulate solid catalyst by contacting said feed hydrocarbons with said catalyst in said reaction zone at cracking conditions including the absence of added molecular hydrogen, and forming olefins and aromatics by dehydrogenating and aromatizing aliphatic components of said feed hydrocarbons and said cracked hydrocarbons in said reaction zone in contact with said active metal in said crystalline silicate; and

(c) forming carbon monoxide in said regeneration zone by burning coke from said catalyst with molecular oxygen at catalyst regeneration conditions, and burning said carbon monoxide with molecular oxygen in contact with said active metal in said crystalline silicate.

4,359,379

PROCESS FOR FLUID CATALYTIC CRACKING OF DISTILLATION RESIDUAL OILS

Masaru Ushio, Yokohama; Tohru Morita, and Takeshi Ishii, both of Kawasaki, all of Japan, assignors to Nippon Oil Company, Ltd., Japan

Filed Dec. 16, 1980, Ser. No. 217,129
Claims priority, application Japan, Dec. 21, 1979, 54-165659; May 7, 1980, 55-59473; Jul. 31, 1980, 55-104295; Jul. 31, 1980, 55-104296; Aug. 8, 1980, 55-108222; Aug. 8, 1980, 55-108223
Int. Cl.³ C10G *11/18*
U.S. Cl. 208—120 9 Claims

1. A process for fluid catalytic cracking of a starting oil selected from the group consisting of a distillation residual oil, a solvent deasphalted oil derived therefrom and a hydrodesulfurizied oil derived therefrom, which comprises withdrawing a part of catalyst particles circulating through a fluid catalytic cracking unit, sending the withdrawn catalyst particles by means of a carrier fluid selected from the group consisting of air, nitrogen, steam and the mixtures thereof at a rate of 0.01 to 100 meters/second in a particle concentration of 0.01 to 500 g/liter to a high gradient magnetic separator in which a ferromagnetic matrix is placed in a uniform high magnetic field to generate a high magnetic gradient around the matrix, thereby separating the withdrawn catalyst particles into a group of particles rendered magnetic by the deposition of at least one metal selected from the group consisting of nickle, vanadium, iron and copper which are contained in the starting oil and a group of non-magnetic particles; and returning the non-magnetic particles to the fluid catalytic cracking unit for re-use.

4,359,380

ADSORPTION PROCESS

Robert P. Bannon, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Aug. 29, 1980, Ser. No. 182,331
Int. Cl.³ C10G *25/03*
U.S. Cl. 208—310 Z 7 Claims

1. An improved process for using three molecular sieve adsorbent beds to effect the resolution of a continuous flow of a vapor-phase hydrocarbon feed mixture containing normal paraffins and non-normal paraffin hydrocarbons into an adsorbate product fraction comprising normal paraffins and a raffinate product fraction comprising non-normal paraffin hydrocarbons, which process comprises repeated sequential performance of the following steps:

step one, in which

the feed mixture is passed through a first adsorbent bed,

effluent is withdrawn from the first bed and passed through a second adsorbent bed

a continuous flow of eluent is passed through a third adsorbent bed,

adsorbate product is withdrawn as an effluent from the third bed, and

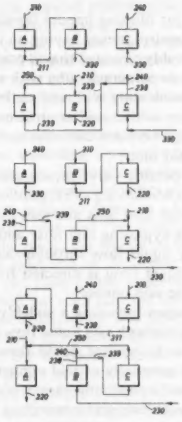
raffinate product is withdrawn as an effluent from the second bed;

step two, in which

the feed mixture is passed through the second bed,
the eluent flow is passed through the third bed,
effluent from the third bed is withdrawn and divided into an adsorbate product fraction, which contains between 60 and 95 volume percent of the effluent from the third bed, and a purge fraction which contains between 5 and 40 volume percent of the effluent from the third bed,
the purge fraction is passed through the first bed,
effluent from the first bed is withdrawn and is passed through the second bed, and
raffinate product is withdrawn as effluent from the second bed;

step three, in which
the feed mixture is passed through the second bed,
effluent is withdrawn from the second bed and passed through the third bed,
the eluent flow is passed through the first bed,
adsorbate product is withdrawn as an effluent from the first bed, and
raffinate product is withdrawn as an effluent from the third bed;

step four, in which
the feed mixture is passed through the third bed,
the eluent flow is passed through the first bed,



effluent from the first bed is withdrawn and divided into an adsorbate product fraction, which contains between 60 and 95 volume percent of the effluent from the first bed, and a purge fraction which contains between 5 and 40 volume percent of the effluent from the first bed,
the purge fraction is passed through the second bed,
effluent from the second bed is withdrawn and is passed through the third bed, and
raffinate product is withdrawn as effluent from the third bed;

step five, in which
the feed mixture is passed through the third bed,
effluent is withdrawn from the third bed and passed through the first bed,
the eluent flow is passed through the second bed,
adsorbate product is withdrawn as an effluent from the second bed, and
raffinate product is withdrawn as an effluent from the first bed; and

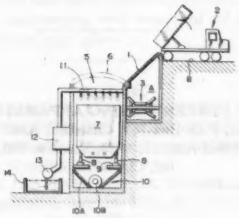
step six, in which
the feed mixture is passed through the first bed,
the eluent flow is passed through the second bed,
effluent from the second bed is withdrawn and divided into an adsorbate product fraction, which contains between 60 and 95 volume percent of the effluent from the second bed, and a purge fraction, which contains between 5 and 40 volume percent of the effluent from the second bed,
the purge fraction is passed through the third bed,
effluent from the third bed is withdrawn and is passed through the first bed, and
raffinate product is withdrawn as effluent from the first bed.

4,359,381

ASPHALT RECYCLING APPARATUS

Michio Jinno, 6-3 Yasuda-dori, Showa-ku, Nagoya-shi, Aichi-ken, Japan

Filed May 11, 1981, Ser. No. 262,433
Int. Cl.³ B03B *1/02*; C10C *3/12*
U.S. Cl. 209—3 **11 Claims**



1. An apparatus for regenerating scrap pavement materials containing asphalt components in admixture with cement components, comprising:
a stationary tunnel and hot water spray means mounted within said tunnel;
conveying means movable linearly through said tunnel for receiving the scrap pavement material and for conveying the material through said tunnel wherein the material is heated by contact with the hot water spray and the asphalt components are thereby softened;
collecting means, disposed along the length of said tunnel and beneath said conveying means for collecting water and matter washed from said scrap material by said spray means; and
separating means for receipt of the scrap pavement material from said conveying means and for separating the material.

4,359,382

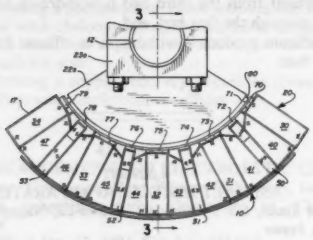
MAGNETIC STRUCTURE FOR A MAGNETIC SEPARATOR

Donald G. Morgan, Milwaukee, Wis., assignor to Magnetics International, Inc., Maple Heights, Ohio

Filed May 15, 1981, Ser. No. 265,052
Int. Cl.³ B03C *1/14*
U.S. Cl. 209—223 A **6 Claims**

1. In a magnetic separator having a rotating drum, an improved arcuate magnetic structure, comprising:
a first set of spaced-apart magnetic elements having radial directions of magnetization;
a second set of magnetic elements, the elements of the second set being interposed between and spaced from adjacent first magnetic elements and having azimuthal directions of magnetization; and
at least a third set of magnetic elements between said first

and second magnetic elements having directions of magnetization angularly oriented between the radial and azi-



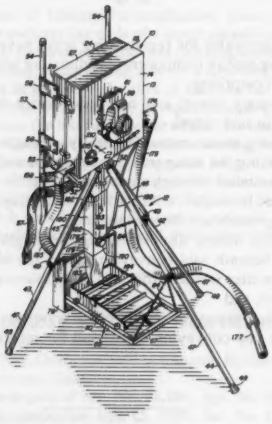
muthal magnetizations of the first and second sets of elements.

4,359,383

PLACER MINING APPARATUS

Dale F. Sweet, P.O. Box 757, Chandler, Ariz. 85224

Filed Aug. 25, 1980, Ser. No. 180,848
Int. Cl.³ B07B 7/00
U.S. Cl. 209—479 26 Claims



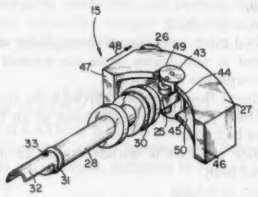
1. Portable dry-placer mining apparatus comprising:
vacuum chamber means defining a contained region of lower-than-atmospheric pressure;
material collection means coupled to said contained region for drawing material into said contained region at a rate determined by the differential pressure within and without the contained region;
material discharge means coupled to said vacuum chamber for discharging material collected in the contained region at a rate controlled by said differential pressure;
separating means into which material is discharged by the material discharge means for separating denser particles from less dense particles of the material;
vacuum actuated vibrating means coupled to said region for vibrating the separating means; and
control means responsive to the differential pressure for controlling the frequency of vibration of the vibratory means.

4,359,384

SELF-LOCKING FILTER VALVE

Earl P. Brane, 9470 Ulmerton Rd., Largo, Fla. 33541; Douglas K. Brane, 3 N. Pine Clr., Belleair, Fla. 33516, and Hilton H. Hammond, 6644 Gulfport Blvd., St. Petersburg, Fla. 33707

Filed Dec. 8, 1980, Ser. No. 213,822
Int. Cl.³ B01D 35/02
U.S. Cl. 210—100 1 Claim



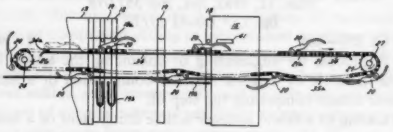
1. A device for filtering impure liquids comprising:
liquid flow control means having an inlet and an outlet;
a filter removably mounted to said control means and having a first side in communication with said inlet and a second side communicating with said outlet;
passage means within said control means defining a liquid flow passage between said inlet and said outlet other than through said filter;
selectively operable valve means associated with said passage means and having a first position for permitting liquid flow between said inlet and said outlet through said passage means bypassing said filter and a second position for preventing liquid flow through said liquid flow passage whereby liquid flow is directed from said inlet through said filter to said outlet;
said valve means including a slidably mounted valve stem extendably through said liquid flow passage along a longitudinal axis to control liquid flow therein and a lever projecting externally of said control means for manually grasping and connecting means pivotally mounting said lever to said stem, said connecting means having a connecting axis between said lever and stem with said connecting axis movable between a first location on a first side of said longitudinal axis to a second location on a second side of said longitudinal axis opposite said first side as said valve means moves from said first position to said second position, said connecting means by location of said connecting axis together with said liquid pressure within said control means being operable to lock said lever and stem in said first position until manually moved and to lock said lever and stem in said position until manually moved;
said connecting means includes a slot and a pivot pin slidably associated together and with said stem and lever;
said slot terminates on opposite sides of said longitudinal axis;
said stem includes a proximal end with said slot located thereon;
said lever includes a fixed pivot axis with said pin offset therefrom extending into and slidable within said slot;
said control means includes a first stop and a second stop with said longitudinal axis extending therebetween,
said stem urged by liquid pressure within said control means releasably holds said lever against said first stop with said longitudinal axis positioned between said pin and said first stop, and holds said lever against said second stop when said longitudinal axis is positioned between said pin and said second stop.

4,359,385

FILTER PRESS PLATE TRANSFER MECHANISM

Bert Krivec, Waukesha, Wis., assignor to Envirex Inc., Waukesha, Wis.

Filed Jul. 6, 1981, Ser. No. 280,746
Int. Cl.[3] B01D *25/12*
U.S. Cl. 210—230 7 Claims



1. In a filter plate press having a normally closed series of rail supported plates, means for separating a given number of said plates successively from the series to allow for cleaning their exposed sides including the exposed side of the end plate of the remaining series, comprising a pair of pins oppositely projecting from the first plate of each of said number, the corresponding pins of each pair being disposed in a series, a track below each such series of pins, parallel endless chains having a common drive means, each chain having upper and lower runs, the upper runs being supported on said tracks, pawls having pivotal attachments to said chains at corresponding intervals for the coordinated movement of each two pawls in one direction along said tracks and their return below said tracks, each pawl having a trailing arm and a rear weight in the form of a pair of rotatable wheels, an upper detent forwardly of the pivotal attachment and a cam extending forwardly of the detent, the effective length of the cam being greater than the spacing of the pins of the plates in the described series such that each two pins engaging the cam hold the detent in a lower disengaged position respecting the pins and the wheels in an elevated position respecting the track, the weight of said wheels being effective to pivot the pawl and lift the detent into engagement with the pin of the end plate of the series as the cam passes beyond said last named pin such that the two pins of the end plate of the series are engaged by two pawl detents and the wheels are supported by the tracks, the roller weights being disposed relative to the respective detents and the pivotal attachments of the pawls to the chains being such that the wheels partially support the plate being moved by the pawls and spaced parallel track means supporting the wheels of the pawls of the lower run of the chain, said track means being spaced so that the pawls may depend therebetween and the slack in the lower run may be in the form of a catenary between each two pawls and hang between said spaced track means.

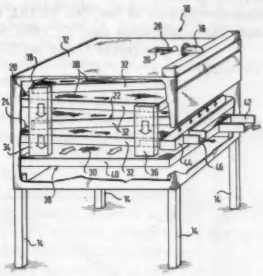
4,359,386

DEVICE FOR SEPARATING OIL FROM AN OIL-WATER MIXTURE

Erhard Crema, Leuchte 96, D-6000 Frankfurt am Main 60, Fed. Rep. of Germany

PCT No. PCT/DE80/00038, § 371 Date Nov. 29, 1980, § 102(e) Date Oct. 14, 1980, PCT Pub. No. WO80/02138, PCT Pub. Date Oct. 16, 1980
PCT Filed Mar. 28, 1980, Ser. No. 198,002
Claims priority, application Fed. Rep. of Germany, Mar. 29, 1979, 2912460
Int. Cl.[3] B01D *23/02*
U.S. Cl. 210—336 4 Claims

1. Apparatus for separating oil from an oil-water mixture utilizing a plurality of water-permeable and oil-repellent fleece members arranged at an inclined angle in a housing for taking up and discharging the oil-water mixture, the improvement comprising, a plurality of perforated inclined planes mounting said fleece means, said inclined planes arranged one over the other in said housing, so that the oil-water mixture or the separated oil introduced above the top plane will flow from one plane to another, a collecting system for collecting the water penetrating each fleece from the lowest point of each



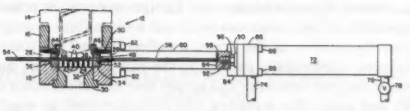
plane, an outlet for said water collecting system, and means for collecting and discharging said separated oil at the lowest point of the bottom most plane.

4,359,387

FLOWABLE MATERIAL PASSAGE WITH INTERPOSABLE SLIDE MEMBER

Delano B. Trott, Rowley, Mass., assignor to Beringer Co., Inc., Marblehead, Mass.

Division of Ser. No. 19,159, Mar. 12, 1979, Pat. No. 4,237,014. This application Apr. 14, 1980, Ser. No. 140,006
Int. Cl.[3] B01D *31/28*
U.S. Cl. 210—352 7 Claims



1. Means for controlling the flow of a flowable material comprising, in combination,

a body defining upstream and downstream passages respectively communicating with a slide channel extending transversely to the passages through the body, the body having a closed annular flat first sealing surface defining a first opening communicating between the slide channel and the contiguous end of one of said passages,

a slide member having a surface overlying said first sealing surface, being slidable in the slide channel and having an aperture portion adapted to permit the flow of said material within the opening defined by said first sealing surface between the upstream and downstream passages,

means to move the slide member to advance said aperture portion from a first position to a second position relative to said first opening,

a seal member at one end of the other of said passages, being sealingly movable relative to the body in a direction transverse to the slide channel and having a closed annular flat second sealing surface directly opposing said first sealing surface and defining a second opening opposing said first opening, said second opening communicating between said other of said passages and said aperture portion, and

compression spring means external to the passages and adapted to exert a force between the body and the seal member, said force urging said second sealing surface against the slide member and producing a sealing force therebetween which is constant and uniformly distributed over the contacting surfaces thereof at all positions of the slide member in said movement.

4,359,388

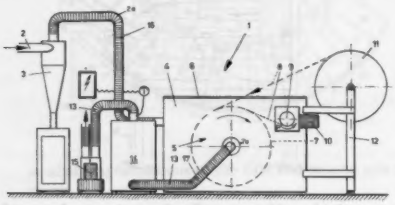
FLUID FILTER

Ing R. V. Nordenskjold, Ernst Heinkel Ring, 8011 Hohenbrunn, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 82,132, Oct. 5, 1979, abandoned. This application Jan. 27, 1981, Ser. No. 229,013

Int. Cl.³ B01D *33/14, 46/20*

U.S. Cl. 210—387 8 Claims



1. A fluid filter apparatus for removing foreign material such as for instance dust from a fluid medium by forcing the fluid medium through a filter material, said apparatus comprising drum support means (4, 7a) a drum (7) having a circumferential surface and mounted on said drum support means for rotation about the drum axis, a continuous filter material web (8) wound about the circumferential surface of said drum (7) in a plurality of layers and having a free outer end, means (15) coupled to the filter apparatus and in flow communication with the drum for forcing a fluid medium having a foreign material therein through the plurality of layers on said drum with said fluid medium passing from the outermost layer through the successive layers whereby the foreign material is primarily deposited on the outermost layer and a clean fluid is removed from the interior of the drum, a collector shaft (9) rotatably mounted substantially parallel to the axis of the drum, means connecting the free outer end of said web to said collector shaft (9), and means for actuating said collector shaft to wind the outermost layer of said filter material web (8) from said drum to the collector shaft as the contamination of the layer proceeds.

4,359,389

METHOD FOR THE PURIFICATION OF INTERFERON

Jochen W. Heine, North Chicago, Ill., assignor to Stichting Rega V.Z.W., Leuven, Belgium

Filed Oct. 17, 1980, Ser. No. 198,223

Claims priority, application Netherlands, Oct. 23, 1979, 7907791

Int. Cl.³ B01D *15/08*

U.S. Cl. 210—644 14 Claims

1. A method for the purification of interferon, by chromatography comprising the steps of:

(a) contacting an aqueous solution of human fibroblast interferon with porous glass beads at neutral or slightly alkaline pH for selective adsorption of interferon from solution onto the beads;

(b) contacting the beads with an elution agent at acidic pH for elution of adsorbed interferon from said beads;

(c) collecting a first interferon-containing eluate;

(d) contacting said eluate with immobilized zinc chelate at neutral or slightly alkaline pH for selective adsorption of interferon from said eluate onto said zinc chelate;

(e) contacting said zinc chelate with an elution agent at acidic pH for elution of interferon from said chelate; and

(f) recovering a second eluate containing purified interferon.

4,359,390

NORBORNYL OXYACETALDEHYDE, ORGANOLEPTIC USES THEREOF AND PROCESS FOR PREPARING SAME

Robert P. Belko, Woodbridge; Richard M. Boden, Monmouth Beach, and Marie R. Hanna, Hazlet, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

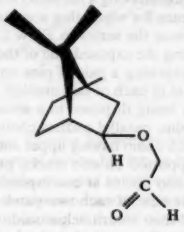
Division of Ser. No. 303,012, Sep. 17, 1981. This application Mar. 11, 1982, Ser. No. 357,078

Int. Cl.³ D06M *13/20*

U.S. Cl. 252—8.6 1 Claim

1. A process for augmenting or enhancing the aroma imparted to fabric by a fabric softener composition or a fabric softener article comprising the step of:

(i) adding to a fabric softener article component or a fabric softener composition an aroma augmenting or enhancing quantity of the norbornyl oxyacetaldehyde having the structure:



(ii) contacting a fabric with said fabric softener article or said fabric softener composition.

4,359,391

WELL TREATMENT WITH EMULSION DISPERSIONS

William M. Salathiel; Thomas W. Muecke; Claude E. Cooke, Jr., all of Houston, Tex., and Norman N. Li, Edison, N.J., assignors to Exxon Production Research Co., Houston, Tex. and Exxon Research and Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 909,139, May 24, 1978, Pat. No. 4,233,665. This application Oct. 9, 1979, Ser. No. 83,009

Int. Cl.³ C09K *3/00*

U.S. Cl. 252—8.55 C 13 Claims

1. A method for acidizing a subterranean formation surrounding a well which comprises:

(a) contacting the formation with a dispersion of a reactive multiple emulsion which comprises a dispersing solution, a liquid hydrocarbon external phase, comprising a blend of a liquid hydrocarbon and an oil soluble surfactant, and more than one solution internal phase wherein at least two solutions comprising the dispersing solution and the solution internal phases are capable of forming an acidizing solution upon mixing with one another; and

(b) causing the solutions to mix in situ to form the acidizing solution and to treat the formation.

4,359,392

STABILIZATION OF MODIFIED CELLULOSE IN BRINES AT HIGH TEMPERATURES

Ralph H. Rygg, Keller, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 29, 1980, Ser. No. 220,880
Int. Cl.³ E21B *43/00*
U.S. Cl. 252—8.55 R 11 Claims

1. A method for improving the temperature stability of a calcium chloride containing brine solution of hydroxyethyl cellulose comprising adding to said solution a member selected from the group consisting of copper metal, cuprous chloride, cupric chloride, cuprous bromide, cupric bromide, and cuprous sulfide, in an amount sufficient to decrease substantially the rate of decomposition of said hydroxyethyl cellulose in said brine solution at temperature above about 225° F.

4,359,393

WATER ACTIVE METALWORKING LUBRICANT COMPOSITIONS

Robert J. Sturwold, Cincinnati, Ohio, assignor to The Cincinnati Vulcan Company, Cincinnati, Ohio

Filed Mar. 9, 1981, Ser. No. 241,619
Int. Cl.³ C10M *1/32, 3/26, 5/20*
U.S. Cl. 252—34.7 12 Claims

1. A water active metalworking lubricant composition containing

(a) an alkanolamine salt of a polymeric fatty acid selected from the group consisting of a C_{36} dimer acid, a C_{54} trimer acid and mixtures thereof,

(b) an organic compound selected from the group consisting of an aliphatic monoalcohol and an aliphatic monocarboxylic acid, and

(c) an alkyl ester of a fatty acid.

4,359,394

THERMALLY STABLE LUBRICANTS FOR REFRIGERATOR SYSTEMS

Gordon C. Gainer, Pittsburgh; Russell M. Luck, Monroeville, both of Pa., and Hendrie J. Grant, St. Paul, Minn., assignors to Thermo King Corporation, Minneapolis, Minn.

Continuation of Ser. No. 956,124, Oct. 30, 1978, abandoned, which is a continuation of Ser. No. 334,328, Feb. 21, 1972, abandoned, which is a continuation-in-part of Ser. No. 144,224, May 17, 1971, abandoned. This application May 16, 1980, Ser. No. 150,484
Int. Cl.³ C10M *1/30*
U.S. Cl. 252—54 5 Claims

1. A compressor refrigeration system employing a fluorocarbon refrigerant, having a lubricant composition in contact with the fluorocarbon refrigerant, the lubricant composition having chemical and thermal stability in the presence of the fluorocarbon refrigerant, the lubricant composition consisting of a thermally stable oil of a viscosity at 100° F. of from 100 to 300 SUS containing from about 5% to about 20% of the weight thereof of a liquid halogenated compound selected from the group consisting of diphenyl ethers and biphenyls and alkyl derivates thereof having at least one halogen substituent selected from the group consisting of chlorine, fluorine and mixtures thereof, the liquid halogenated compound being substantially completely soluble in the oil over the expected temperature range of the refrigeration system, the compound providing for good lubricity in the lubricant composition at cold startup, and at hot compressor operating temperatures while in vapor contact with hot fluorocarbon refrigerant, and the lubricant composition being highly resistant to chemical reaction with the fluorocarbon and/or the materials in the refrigeration system at the expected temperatures and operating conditions of the refrigeration system.

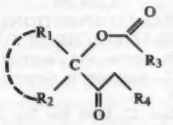
4,359,395

PROCESS FOR ENHANCING THE ORGANOLEPTIC PROPERTIES OF PERFUMED ARTICLES USING ALKYL ESTERS OF 1-ALKANOLYL CYCLOALKANOLS

Ronald P. Schreck, Old Bridge, N.J.; Kenneth K. Light, North Ogden, Utah; John B. Hall, Rumson, N.J.; Frederick L. Schmitt, Holmdel, N.J.; Manfred H. Vock, Locust, N.J.; William L. Schreiber, Jackson, N.J.; Joaquin F. Vinals, Red Bank, N.J., and Jacob Kiwala, Brooklyn, N.Y., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 133,828, Mar. 25, 1980, Pat. No. 4,327,749.
This application Oct. 22, 1981, Ser. No. 314,003
Int. Cl.³ C11D *3/50*
U.S. Cl. 252—174.11 4 Claims

1. A process for augmenting or enhancing the organoleptic properties of a consumable material selected from the group consisting of perfumed articles, comprising the step of adding to said consumable material an organoleptic property augmenting or enhancing quantity of at least one compound having the generic structure:



wherein R_1 and R_2 taken together complete a cycloalkyl moiety or a methyl, dimethyl or trimethyl cycloalkyl moiety containing five or six carbon atoms in the ring and wherein R3 is C_1–C_3 lower alkyl and R_4 is methyl or hydrogen.

2. The process of claim 1 wherein the consumable material is a perfumed article and the perfumed article is a solid or liquid anionic, cationic, nonionic or zwitterionic detergent.

4,359,396

HYDRIDE OF BERYLLIUM-BASED INTERMETALLIC COMPOUND

Arnulf J. Maeland, Succasunna, N.J., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Filed Dec. 4, 1980, Ser. No. 213,145
Int. Cl.³ C09K *3/00;* C01F *3/00*
U.S. Cl. 252—188.25 10 Claims

1. A hydride composition of the formula

$$Be_{2-x}A_xT_{1-y}M_yH_z$$

wherein the alloy $Be_{2-x}A_xT_{1-y}M_y$ is of an Aluminum Boride Phase Structure, Cubic C15 Laves Phase Structure or Hexagonal C14 Laves Phase Structure,

wherein A is at least one transition metal selected from the group consisting of Cr, Mn, Fe, Co, Nu and Cu,

wherein T is at least one Group IV or V metal selected from the group consisting of Ti, Zr, Hf, V, Nb and Ta,

wherein M is at least one metal selected from the group consisting of W, Mo, Ag, Pd, Re and Al, and

wherein x is between 0 and 0.5, y is between 0 and 0.5 and z is at least 0.1.

4,359,397

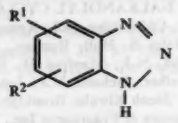
BENZOTRIAZOLE COMPLEXES AND FILM UNITS EMPLOYING SAME

Howard G. Rogers, Weston; Robert D. Eckert; Ronald A. Sahatjian, both of Lexington, and Robert A. Sulesky, Georgetown, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 31, 1980, Ser. No. 221,845
Int. Cl.³ C09K *3/00*
U.S. Cl. 252—194 32 Claims

1. A solid composition having a releasable content of water

and comprising a complex of water, a benzotriazole of the formula



wherein R^1 and R^2 are independently hydrogen, a monovalent organic radical, halogen, or nitro, and at least one water-soluble base having a basicity greater than that of said benzotriazole and capable of dissociating to provide an anion and a monovalent or divalent metal cation, said water, benzotriazole and water-soluble base being in proportions such that the complex has a melting range above 35° C., said complex being capable of releasing a substantial portion of said water content by the melting thereof.

4,359,398

LIQUID CRYSTAL COMPOSITIONS WITH NOVEL TRIS-AZO DICHROIC DYES

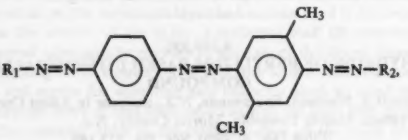
Herbert S. Cole, Jr., Scotia, and Siegfried Aftergut, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 22, 1980, Ser. No. 219,087

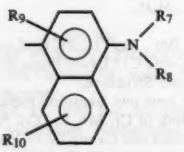
Int. Cl.³ G02F *1/13;* **C09K** *3/34;* **C09B** *31/16*

U.S. Cl. 252—299.1 **8 Claims**

1. A liquid crystal composition for use in a liquid crystal display, comprising host liquid crystal material and at least one guest dichroic dye having a maximum absorption greater than about 580 nm and having an order parameter of at least 0.70 as dissolved in said liquid material of the general formula,



where R_1 and R_2 are selected from aromatic amine groups of the formula



R_7 is selected from the class consisting of hydrogen, $C_{(1-6)}$ alkyl, aryl, arylalkyl and alkyl amine, R_8 is selected from the class consisting of hydrogen, $C_{(1-6)}$ alkyl, alkyl amine, alkoxy and halogen, and R_9 and R_{10} are selected from the class consisting of hydrogen, $C_{(1-3)}$ alkyl, alkoxy and halogen.

4,359,399

TAGGANTS WITH EXPLOSIVE INDUCED MAGNETIC SUSCEPTIBILITY

Carl Boyars, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Aug. 27, 1980, Ser. No. 181,924

Int. Cl.³ G01N *33/22;* **C09K** *3/00*

U.S. Cl. 252—408 **3 Claims**

1. In a color-coded explosive taggant consisting essentially of a plurality of laminated layers of a resinous material in which each layer differs in color according to a sequence corresponding to a preconceived color code thereby enabling visual identification of said color-coded taggant, the improvement which comprises the addition of a minor amount of an explosion induced, magnetically susceptible, nickel formate to at least one of said laminated layers.

4,359,400

CATALYST REGENERATION PROCEDURE

George R. Landolt, Audobon; William D. McHale, Swedesboro, and Hans J. Schoennagel, Lawrenceville, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jan. 27, 1981, Ser. No. 228,855

Int. Cl.³ B01J *23/96, 23/46;* **C10G** *35/09*

U.S. Cl. 252—415 **29 Claims**

1. In the process for treatment of a supported multi-metallic platinum-containing catalyst wherein said catalyst is contacted with an oxygen-containing gas at elevated temperatures, followed by a first reduction step, followed by treatment with chlorine at elevated temperatures, followed by a second reduction step, the improvement which comprises treating said catalyst with a dry hydrogen halide in the absence of oxygen or a source thereof after or concurrent with the first reduction treatment and carrying out the remaining steps in the absence of oxygen or a source thereof.

7. The process of claim 1 wherein said platinum-containing catalyst also contains rhenium and prior to the first reduction step said catalyst is treated with a mixture of a chlorine-containing component and oxygen.

8. The process of claim 7 wherein said chlorine-containing component is hydrogen chloride.

4,359,401

METHOD OF REGENERATION OF AN IRON PHOSPHATE-TYPE CATALYST

Kenneth W. Barnett, Worthington, Ohio, assignor to Ashland Oil, Inc., Ashland, Ky.

Filed Jan. 26, 1981, Ser. No. 228,303

Int. Cl.³ B01J *27/28, 27/18;* **C07C** *51/377, 57/05*

U.S. Cl. 252—416 **6 Claims**

1. The method of regenerating an iron/phosphate catalyst wherein said iron comprises a mixture of Fe^{++} and Fe^{+++} wherein said catalyst has been partially deactivated by use in oxidative dehydrogenation of a lower molecular weight carboxylic acid comprising the steps of:

(a) subjecting the catalyst to an extreme oxidizing atmosphere at a temperature of about 350° C. or greater for at least two hours; and

(b) subjecting the catalyst to a reducing atmosphere at about 350° C. or greater.

5. The method of regenerating an iron phosphate catalyst wherein said iron comprises a mixture of Fe^{++} and Fe^{+++} and wherein said catalyst has been deactivated by use in the oxydehydrogenation of a lower molecular weight carboxylic acid comprising:

(a) subjecting the catalyst to an oxidizing mixture of gases comprising oxygen and steam at a temperature of about 350° C. or more for at least two hours; and

(b) subjecting the catalyst to a reducing mixture of gases comprising a lower molecular weight organic compound and steam at a temperature of about 350° C. or more.

6. The method as claimed in claim 1, 2, 3, 4 or 5 wherein said iron phosphate catalyst has the formula: $FeP_xMe_yO_z$ wherein Me is one or more of the following elements: Li, Na, K, Rb, Cs, Mg, Ca, Sr and Ba; and

x is 0.2 to 2.0; and

y is 0.0 to 2.0; and

z has a value sufficient to compensate the average valences of the Fe, P and Me in the oxidation states in which these exist in the catalyst.

4,359,402

MONOOLEFIN CATALYSTS AND METHOD FOR THE PREPARATION THEREOF

Frederick W. Haas, University Heights, and William J. Miloscia, Shaker Heights, both of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Jun. 16, 1980, Ser. No. 160,041
Int. Cl.[3] C08F 4/64
U.S. Cl. 252—429 B 8 Claims

1. A method for forming a coating on the surface of Ziegler-Natta catalysts for the polymerization of monoolefins comprising the steps of:

dissolving a membrane forming compound, selected from the group consisting of silicones, tetraalkyl silicons, silicon alkyl halides and silicon alkyl hydrides, in a hydrocarbon solvent;

adding the Ziegler-Natta catalyst to said hydrocarbon solvent and agitating to form a mixture; and,

drying said mixture to form particles of the catalyst having a coating of said membrane forming compound.

4,359,403

POLYMERIZATION CATALYST AND METHOD

Raymond E. Hoff, Palatine; Thomas J. Pullukat, Hoffman Estates, and Mitsuzo Shida, Barrington, all of Ill., assignors to Chemplex Company, Rolling Meadows, Ill.

Filed Apr. 13, 1981, Ser. No. 253,732
Int. Cl.[3] C08F 4/64, 4/68
U.S. Cl. 252—429 B 35 Claims

1. An olefin polymerization and copolymerization catalyst active in the presence of an alkyl aluminum cocatalyst prepared by mixing, in the presence of a solvent, reactive materials comprising particles of an inorganic oxide having active surface hydroxyl or oxide groups chosen from the group consisting of silica, alumina and silica-alumina, said particles having been fluorided with a fluorine compound and then heated at between about 50° C. and 700° C. to provide less than about 2×10^{-4} g of chemically bonded fluorine per square meter of particle surface area, and a compound of the general formulas MgR_2 or $(MgR_2)_m(AlR_3')_n$ where R and R′ are alkyl groups and m/n is between about 0.5 and 10, inclusive, to form a reaction mixture of said solvent and a hydrocarbon insoluble first reaction product, and mixing said reaction mixture with a halide, oxyhalide or alkoxyhalide of a metal chosen from the group consisting of titanium, vanadium and zirconium to form a second reaction product.

4,359,404

HYDROGENATION OF ESTERS USING ALKALI DOPED HETEROGENEOUS GROUP VIII TRANSITION METAL CATALYSTS

Roger A. Grey, Denville, and Guido P. Pez, Boonton, both of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Division of Ser. No. 132,917, Mar. 24, 1980, abandoned. This application Sep. 29, 1981, Ser. No. 306,834
Int. Cl.[3] B01J 31/28, 31/12; C07C 29/00, 31/34
U.S. Cl. 252—430 31 Claims

1. A method for preparing a catalyst comprising contacting a group VIII metal deposited on carbon with a member of the group consisting of alkali metal arenes, alkali metal ketyls and mixtures thereof in the presence of an inert polar solvent.

18. A solid catalyst composition consisting essentially of about 0.1 to about 15 weight percent of at least one group VIII transition metal, about 1 to about 50 weight percent of at least one alkali metal, about 2 to about 50 weight percent of an anion radical selected from the group consisting of arene radical anions, ketyls and mixtures thereof, with the alkali metal being in cation form in a molar amount equal to the anion radical, and the balance a support comprising high surface area carbon.

30. The catalyst composition of claim 18 wherein the alkali metal is about 2 to about 20 weight percent sodium or potassium or about 1 to about 5 weight percent lithium.

4,359,405

SOLVENT CONDITIONING OF PHOSPHORUS-VANADIUM-OXYGEN CATALYSTS

Ramon A. Mount, and Warn D. Robinson, both of St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 22, 1980, Ser. No. 218,603
Int. Cl.[3] B01J 27/14
U.S. Cl. 252—435 31 Claims

1. In a process for preparing phosphorus-vanadium-oxygen complex catalysts having a phosphorus to vanadium atom ratio in the range of about 1:2 to about 2:1, the process comprising:

(a) contacting vanadium and phosphorus compounds under conditions which will provide a catalyst precursor wherein greater than 50 atom % of the vanadium is in the tetravalent state;

(b) recovering the catalyst precursor in a dry condition;

(c) forming the catalyst precursor into agglomerates; and

(d) calcining the catalyst precursor agglomerations at a temperature between about 300° C. and 600° C.,

the improvement comprising contacting the recovered dry catalyst precursor with a non-aqueous solvent in an amount sufficient to increase crush strength and then drying the catalyst precursor.

4,359,406

HIGHLY DISPERSED SUPPORTED GROUP VIII METAL-PHOSPHORUS COMPOUNDS, AND HIGHLY DISPERSED, SUPPORTED GROUP VIII METAL-ARSENIC AND A PROCESS FOR MAKING SAID COMPOUNDS

Shun C. Fung, Edison, N.J., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Jun. 17, 1977, Ser. No. 807,519
Int. Cl.[3] B01J 27/14, 27/24; H01M 4/88; B01J 23/40
U.S. Cl. 252—437 44 Claims

1. A method for preparing Group VIII metal-phosphorus compounds supported on a high surface area solid support selected from the group consisting of carbon, alumina, silica, silica-alumina, zeolite, kieselguhr, vermiculite, the refractory oxides of Group IVb and Vb transition metals and mixtures thereof, wherein the Group VIII metal-phosphorus crystallite size is about 300 Å or less, wherein the process consists of the steps of:

(a) impregnating said high surface area support with a solution of at least one water soluble Group VIII metal salt selected from the group consisting of water soluble Group VIII metal chloride, Group VIII metal nitrate and Group VIII metal ammonia complexes;

(b) impregnating said support with phosphorus by means of a phosphorus source selected from the group consisting of elemental phosphorus and at least one water soluble phosphate salt, in an amount sufficient to resalt in a phosphorus to Group VIII metal atomic ratio of about 0.3 to about 3.0;

(c) reducing the reducible deposited components resultant from the completion of steps (a) and (b) in a gaseous reducing atmosphere at a temperature in the range of about 200° C. to about 650° C. for a time sufficient to generate the desired supported Group VIII metal-phosphorus compounds.

4,359,407

CATALYST COMPOSITIONS ESPECIALLY USEFUL FOR PREPARATION OF UNSATURATED ACIDS

Serge R. Dolhyj, Parma; Ernest C. Milberger, Solon, and Noel J. Bremer, Stow, all of Ohio, assignors to Standard Oil Company

Continuation of Ser. No. 507,316, Sep. 20, 1974, abandoned, Division of Ser. No. 428,267, Dec. 26, 1973, abandoned. This application Jul. 13, 1978, Ser. No. 924,118

Int. Cl.³ B01J *27/18, 23/10, 23/78, 23/88*

U.S. Cl. 252—437 **1 Claim**

1. A catalyst composition consisting essentially of oxides or oxide complexes having the empirical formula

$$A_aD_bW_cV_dMo_eO_x$$

wherein

A is Co, Ni, Zn, Cu, Mg, Mn, Bi, Ti, Zr, Sn, P, Fe, an alkali metal an alkaline earth metal, an element of the lanthanoid series or mixture thereof; and

D is thorium;

and wherein

a is 0 to about 5;

b, c and d are about 0.1 to about 10;

e is a number of about 6 to about 16; and

x is the number of oxygens required to satisfy the valence requirements of the other elements present.

4,359,408

ACTIVATED MAGNESIUM OXIDE CATALYSTS

Daniel L. Ralston, Ponca City, Okla., assignor to Conoco Inc., Ponca City, Okla.

Filed Jun. 4, 1981, Ser. No. 270,282

Int. Cl.³ B01J *27/02, 27/24, 31/12, 31/02*

U.S. Cl. 252—440 **12 Claims**

1. A method for producing highly active magnesium oxide catalysts containing from about 0.5% to about 15% by weight of amorphous titanium, uranium, zirconium, or chromium ions or mixtures thereof together with from about 0.5% to about 15% by weight of sulfate ions, all based on the total weight of the catalyst comprising

(a) contacting magnesium oxide with a material capable of donating amorphous titanium, uranium, zirconium, or chromium ions, and with a material capable of donating sulfate ions,

(b) adding water to (a) to form a mixture, then

(c) mechanically grinding said mixture for a time and at an intensity sufficient for the mixture of (a) to uptake water to a level of at least 15% by weight, then

(d) forming and calcining the product of (c) to obtain the catalyst.

4,359,409

CATALYST PREPARATION

Gerrit J. den Otter, Amsterdam, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Filed Jun. 25, 1981, Ser. No. 277,359

Claims priority, application Netherlands, Aug. 26, 1980, 8004797

Int. Cl.³ B01J *29/22*

U.S. Cl. 252—455 Z **9 Claims**

1. A process for the preparation of a catalyst suitable for the isomerization of normal paraffins, which process comprises;

(a) treating mordenite with a solution prepared by incorporating potassium and/or sodium ions in an aqueous acid solution having a normality between 0.5 and 3.0, in an amount which, expressed in grams per liter, is at least ten times the normality of the aqueous acid solution;

(b) treating the resulting mordenite with an aqueous solution of an ammonium compound, therein forming ammonium mordenite;

(c) mixing said ammonium mordenite with an amorphous material consisting essentially of one or more oxides of metals of groups II, III and IV, on which amorphous material one or more noble metals of group VIII have been deposited; and

(d) subjecting the resulting mixture to shaping under high pressure.

5. The process according to claim 1 wherein said amorphous material is alumina.

6. The process according to claim 1, wherein said noble metal is platinum.

9. A catalyst suitable for the isomerization of normal paraffins, prepared according to the process of claim 1.

4,359,410

PROCESS OF PRODUCING A CATALYST CARRIER

Hideaki Ueno, Okazaki, and Fumiyoshi Noda, Toyota, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Japan

Filed Dec. 8, 1980, Ser. No. 214,323

Claims priority, application Japan, Jul. 23, 1980, 55/100759

Int. Cl.³ B01J *21/04*

U.S. Cl. 252—463 **5 Claims**

1. A process of producing a catalyst carrier, comprising the steps of:

(a) dehydrating alumina hydrate;

(b) granulating the alumina obtained from step a;

(c) calcining the granules obtained in step b at from about 150° C. to 850° C.;

(d) curing the granules calcined in step c in an aqueous solution of one or more members selected from the group consisting of $NaAlO_2$, NaOH, KOH, $Ba(OH)_2$, and a carbonate salt under saturated steam pressure at from about 120° C. to 200° C.; and

(e) drying and firing the product of step d.

4,359,411

FLEXIBLE SEMICONDUCTIVE POLYMERS

Oh-Kil Kim, Burke, Va., and Robert B. Fox, Washington, D.C., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 3, 1980, Ser. No. 193,864

Int. Cl.³ H01B *1/00*

U.S. Cl. 252—500 **6 Claims**

1. A flexible, film-forming, electrically conductive polymeric composition consisting of a thermoplastic polymer matrix having dispersed therein an effective amount of a complex represented by the formula:

$$[E\text{-}(M^{n+})][TCNQ^{-}]_n\,TCNQ^{\circ}_m$$

wherein n is 1 or 2, m is o or 1, TCNQ is 7,7,8,8 tetracyanoquinodimethane, M is an alkali metal, alkaline earth metal, or ammonium, and E is a polymeric ether selected from the class consisting of poly(ethylene oxide), polyoxethane, polytetrahydrofuran, poly(vinyl ethers), polyphenylene oxide, polydioxalan, and mixtures thereof.

4,359,412

ORGANOLEPTIC USE OF PRINS REACTION PRODUCTS OF DIISOAMYLENE DERIVATIVES

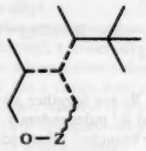
Richard M. Boden, Monmouth Beach, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.

Filed May 28, 1981, Ser. No. 267,850

Int. Cl.³ A61K *7/46*

U.S. Cl. 252—522 R **1 Claim**

1. A process for augmenting or enhancing the aroma of a perfume or cologne comprising the step of adding to a perfume or cologne base an aroma augmenting or enhancing quantity of at least one compound defined according to the structure:



wherein one of the dashed lines is a carbon-carbon double bond and each of the other of the dashed lines is a carbon-carbon single bond; wherein the wavy line:~~~~~ is a carbon-carbon single bond or no bond at all; wherein Z represents hydrogen, —CH_2—, or C_2–C_4 acyl; with the proviso that when the wavy line:~~~~~ is no bond at all, Z represents hydrogen or C_2–C_4 acyl and when the wavy line:~~~~~ is a carbon-carbon single bond, then Z represents —CH_2—.

4,359,413

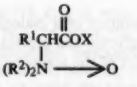
SOLID DETERGENT COMPOSITIONS CONTAINING ALPHA-AMINE OXIDE SURFACTANTS

James F. Ward, and Lawrence A. Gilbert, both of Fairfield, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Mar. 17, 1981, Ser. No. 244,536
Int. Cl.³ C11D *3/10, 1/10*
U.S. Cl. 252—527 **27 Claims**

1. A solid detergent composition comprising:

(a) from about 1% to about 80% by weight of an amine oxide surfactant of the formula



wherein R^1 is hydrogen or a C_1–C_{20} hydrocarbyl group; each R^2 is a C_1–C_{20} hydrocarbyl group or a C_2–C_3 alkylene oxide group containing from 1 to about 10 alkylene oxide units; and X is hydrogen or a water-soluble metal, ammonium or substituted ammonium cation; provided that the total number of carbon atoms in hydrocarbyl groups at the R^1 and R^2 substituents is from about 8 to about 36; and

(b) from about 2% to about 99% by weight of an alkaline material which exhibits a pH of greater than 9.0 at a concentration of 1% by weight in water.

4. A composition according to claim **1** wherein the alkaline material comprises a detergent builder material.

16. A composition according to claim **4** wherein the detergent builder material is selected from the group consisting of alkali metal phosphates, polyphosphates, polyphosphonates, carbonates, silicates, borates, polyacetates, polycarboxylates, aluminosilicates, and mixtures thereof.

4,359,414

INSULATIVE COMPOSITION FOR FORMING POLYMERIC ELECTRIC CURRENT REGULATING JUNCTIONS

Sebastian V. R. Mastrangelo, Hockessin, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 938,801, Sep. 1, 1978, abandoned, which is a division of Ser. No. 825,179, Aug. 17, 1977, abandoned, which is a continuation-in-part of Ser. No. 532,298, Dec. 12, 1974, abandoned, which is a continuation-in-part of Ser. No. 317,377, Dec. 22, 1972, abandoned. This application Oct. 29, 1980, Ser. No. 201,785
Int. Cl.³ H01B *3/18, 1/06;* **B32B** *5/16*
U.S. Cl. 523—200 **16 Claims**

1. Electric current regulating junction comprising a normally insulative, electrically activatable composition disposed as a layer 0.1 to 2540 microns in thickness having an electric resistance greater than 10^8 ohms through its thickness, said composition consisting essentially of 10 to 85 volume percent of a substantially linear, unitary polymeric binder having 15 to 90 volume percent of particles of aluminum substantially homogeneously dispersed in it, said aluminum particles having electrically conductive metallic interiors and thin electrically insulative surface coatings of aluminum oxide sufficient to impart electric resistance between two or more of said particles in contact with one another, the amounts of said binder and particles totaling 100 volume percent, the unitary polymer in said binder having a glass transition temperature of at least 100° C. and being selected from aromatic polyimides, aromatic poly(amide-imides), aromatic poly(ester-imides) and aromatic polyamides, said junction being capable of being (a) activated solely by electrical means from a high to a low electric resistance state in which it will function as an ohmic conductor capable of passing a relatively low reading current, (b) activated solely by electrical means so as to be switched between low electric resistance and relatively high electric resistance states and vice versa, (c) switches from the low resistance to the high resistance state solely by application of relatively low electric currents which are at least 10 times the magnitude of said reading current and which are in the form of current-limited pulses which have a duration not exceeding 100 milliseconds and provide switch-off energy of up to 0.1 joule, said pulse being regulated so that at the end thereof the current pulse will decay rapidly, and (d) used in an alterable read-only memory system.

4,359,415

ISOLATION OF AN ANTINEOPLASTIC PROTEIN FRACTION AND AN ANTINEOPLASTIC PEPTIDE FRACTION FROM HUMAN URINE

Nathan H. Sloane, Germantown, Tenn., assignor to University of Tennessee Research Corporation, Knoxville, Tenn.

Filed Jun. 3, 1981, Ser. No. 269,995
Int. Cl.³ C07G *7/00*
U.S. Cl. 260—112 R **12 Claims**

1. A method for extracting a glycoprotein fraction including a glycoprotein having a molecular weight of between about 20,000 Daltons and about 40,000 Daltons, said protein exhibiting antineoplastic activity, from human urine containing said glycoprotein fraction, said method comprising contacting a magnesium silicate adsorbent with human urine, washing non-adsorbed urine from said adsorbent, and eluting said glycoprotein fraction from said adsorbent with a mixture of aqueous acetone and glycerol comprising about 15% aqueous acetone containing about 30% glycerol at a pH of between about 8.5 and about 9.5.

4,359,416

PROCESS FOR PREPARING L-CARNOSINE

Fredric J. Vinick, Waterford, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed Jul. 13, 1981, Ser. No. 282,366
Int. Cl.³ C07C *103/52*
U.S. Cl. 260—112.5 R **7 Claims**

1. A process for preparing L-carnosine which comprises the steps of reacting L-histidine with tetrahydro-1,3-thiazin-2,4-dione in an aqueous medium at a pH of from about 8.5 to about 9.5 and at a temperature of from about 0° to about 25° C.; dethiocarboxylating by acidifying to a pH of below about 4.5; adjusting to a pH of 8.2; removing the water; and separating the product from the residue by crystallizing from a solvent selected from the group consisting of alkanols having one to four carbon atoms, polychlorinated hydrocarbons having one to two carbon atoms and alkyl acetates having three to six carbon atoms, with the proviso that pH adjustments above 7.0 are made with a base selected from the group consisting of

trialkylbenzylammonium hydroxide and a tetraalkylammonium hydroxide wherein said alkyl contains from one to four carbon atoms and pH adjustments below 7.0 are made with an organic acid having a pKa ≦3.75.

4,359,417

PROCESS FOR EXTRACTING OLEAGINOUS SEED MATERIALS PARTICULARLY COTTONSEED WITH AQUEOUS ALCOHOL

George B. Karnofsky, Pittsburgh, and Roger J. Hansotte, Butler, both of Pa., assignors to Dravo Corporation, Pittsburgh, Pa.

Filed Feb. 25, 1981, Ser. No. 238,034
Int. Cl.³ A23J *1/14*
U.S. Cl. 260—123.5 **27 Claims**

1. In a process for forming residue meal by extracting oil from an oleaginous seed material consisting in part of components comprising carbohydrates, fatty acids, non-oil lipids and oil wherein the oil is extracted last by a concentrated aqueous solution of a monhydric alcohol, the improvement comprising first contacting said oleaginous seed material with an aqueous solution of said monohydric alcohol less concentrated than said concentrated aqueous solution thereof, and at a concentration to form a miscella by selectively extracting substantially all of said components other than said carbohydrates and oil from said oleaginous seed material with minimal extraction of said carbohydrates.

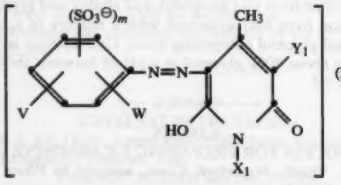
4,359,418

AMINE SALTS OF AZO DYESTUFFS OF THE PYRIDONE SERIES

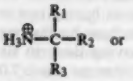
Paul Lienhard, Frenkendorf, and Gert Hegar, Schönenbuch, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 31,282, Apr. 18, 1979, abandoned. This application Apr. 9, 1981, Ser. No. 252,526
Claims priority, application Switzerland, Mar. 12, 1979, 2327/79
Int. Cl.³ C09B *29/36*; C07C *85/20*
U.S. Cl. 260—156 **6 Claims**

1. An azo dyestuff sulfonic acid salt of the formula:



or of a tautomer thereof, wherein V is hydrogen, W is hydrogen, methyl or alkoxy of 1 to 4 carbon atoms; X_1 is hydrogen, alkyl of 1 to 18 carbon atoms; hydroxyalkyl of 1 to 18 carbon atoms; alkoxyalkyl of 1 to 18 carbon atoms; cyanoalkyl of 1 to 18 carbon atoms; cycloalkyl of 6 to 10 carbon atoms; aralkyl of 7 to 10 carbon atoms; phenyl; or phenyl substituted by halogen, alkyl of 1 to 6 carbon atoms or alkoxy of 1 to 6 carbon atoms; Y_1 is cyano or $CONH_2$, $HB^{\oplus}$ is a radical of the formulae:



or

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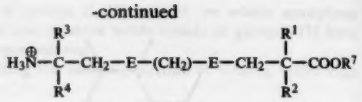
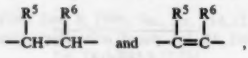


in which R_1, R_2 and R_3 are together alkyl of 7 to 24 carbon atoms, each of R^1 and R^3 independently represents hydrogen or a straight chain or branched alkyl radical of 1 to 8 carbon atoms, R^2 represents a straight chain or branched alkyl radical of 1 to 8 carbon atoms and R^4 represents a straight chain or branched alkyl radical of 1 to 18 carbon atoms, or R^1 and R^2; R^3 and R^4; or both R^1 and R^2, and R^3 and R^4 together with the carbon atom to which they are attached form a cycloaliphatic ring containing 4 to 8 carbon atoms, and wherein each E represents one of the radicals;



in which each of R^5 and R^6 independently is hydrogen or alkyl of 1 to 4 carbon atoms, R^7 is a straight chain or branched alkyl containing altogether 1 to 18 carbon atoms; and m is 1 or 2.

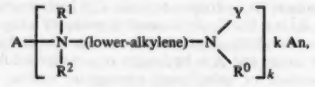
4,359,419

BLEED-FAST CATIONIC DYE STUFFS

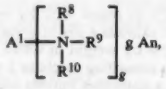
Alex Pociluyko, Glen Mills, Pa., assignor to Scott Paper Company, Philadelphia, Pa.

Division of Ser. No. 902,661, May 4, 1978, Pat. No. 4,221,562. This application Oct. 26, 1979, Ser. No. 88,288
Int. Cl.³ C09B *31/10, 67/00*; D06P *3/60, 5/02*
U.S. Cl. 260—176 **5 Claims**

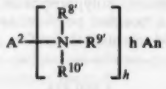
1. The reaction product of a dialdehyde selected from the group consisting of glyoxal and glutaraldehyde and a cationic, water-soluble dyestuff of the formulae:



or



or



wherein

R^0 is hydrogen, lower-alkyl or hydroxy-lower-alkyl;

R^1 is lower-alkyl, lower-alkenyl or hydroxy-lower-alkyl;

R^2 is lower-alkyl, lower-alkenyl, hydroxy-lower-alkyl or (lower-alkylene)-NR^0Y or R^1 and R^2 together with the nitrogen atom, are pyrrolidino, piperidino or 4-lower-alkanoyl piperazino;

Y is hydrogen or

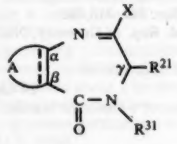
wherein R is hydrogen, lower-alkyl, lower-alkenyl, phenyl or phenyl-lower-alkyl;
A is a dyestuff residue attached to the quaternary ammonium nitrogen atom through a lower-alkylene bridge;
k is a small integer whose value is dependent on the nature of A such that it has a range from one to two;
R^8 is lower-alkyl, lower-alkenyl or hydroxy-lower-alkyl;
R^9 is lower-alkyl, hydroxy-lower-alkyl or NH_2;
R^{10} is lower-alkyl or lower-alkenyl;
A^1 is a dyestuff residue attached to the quaternary ammonium nitrogen atom through a lower-alkylene bridge;
g is a small integer whose value is dependent on the nature of A^1 such that it has a range from one to two;
$R^{8'}$ is lower alkyl;
$R^{9'}$ is lower-alkyl, lower-alkenyl or hydroxy-lower-alkyl;
$R^{10'}$ is lower-alkyl, lower-alkenyl or hydroxy-lower-alkyl or $R^{9'}$ and $R^{10'}$ together with the nitrogen atom are morpholino;
A^2 is a dyestuff residue attached to the quaternary ammonium nitrogen atom through a lower-alkylene bridge;
h is a small integer whose value is dependent on the nature of A^2 such that it has a range from one to two; and
An is an anion.

4,359,420
THIENO-1,4-DIAZEPIN-5-ONES AND BENZO-1,4-DIAZEPIN-5-ONES

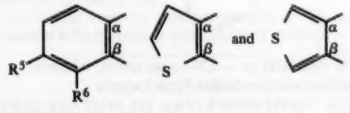
Max Gerecke; Willy Haefely, both of Reinach; Walter Hunkeler, Magden; Emilio Kyburz, Reinach; Hanns Möhler, Inzlingen; Lorenzo Pieri, Riehen, and Petar Polc, Binningen, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 193,775, Oct. 3, 1980, Pat. No. 4,316,839. This application Nov. 16, 1981, Ser. No. 321,942
Claims priority, application Switzerland, Oct. 4, 1979, 8971/79; Oct. 4, 1979, 8972/79; Nov. 30, 1979, 10664/79; Nov. 30, 1979, 10665/79; Jul. 25, 1980, 5716/80
Int. Cl.³ C07D *487/04, 487/14, 513/14*
U.S. Cl. 260—239.3 B **1 Claim**

1. A compound of the formula

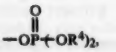


wherein A together with the two carbon atoms denoted as α and β is selected from the group consisting of

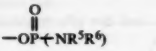


(a) (b) (c)

the dotted line represents the double bond present in groups (a) and (b), X is halogen, alkylthio, aralkylthio, N-nitrosoalkylamino, alkoxy, mercapto,



wherein R^4 represents lower alkyl or



wherein R^5 and R^6 each represent lower alkyl, allyl or phenyl or R^5 and R^6 together with the nitrogen atom to which they are attached represent morpholino and either R^{21} is hydrogen and R^{31} is lower alkyl or R^{21} and R^{31} together are trimethylene or propenylene and the carbon atom denoted as γ has the S- or R,S-configuration.

4,359,421
PROCESS FOR MAKING EPSILON-CAPROLACTAM

Weldon K. Bell, Pennington, and Clarence D. Chang, Princeton, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jan. 15, 1981, Ser. No. 225,157
Int. Cl.³ C07D *201/04*
U.S. Cl. 260—239.3 A **13 Claims**

1. A process for manufacturing epsilon-caprolactam comprising passing cyclohexanone oxime over a zeolite having a silica to alumina ratio of at least 12 and a Constraint Index of 1 to 12.

4,359,422
ACID STABILIZED COMPOSITIONS OF 2,2,2-TRICHLORO-1-(N-HYDROCARBYLPYRRYL-2)-ETHANOL

Michael J. Dagani, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Division of Ser. No. 28,317, Apr. 9, 1979, Pat. No. 4,233,219. This application Feb. 1, 1980, Ser. No. 117,778
Int. Cl.³ C07D *207/30*
U.S. Cl. 548—562 **6 Claims**

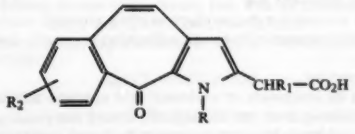
1. An acidic solution of 2,2,2-trichloro-1-(N-methylpyrryl-2)-ethanol consisting essentially of
(a) methylene chloride,
(b) 2,2,2-trichloro-1-(N-methylpyrryl-2)-ethanol, and
(c) a protonic acid added in the form of a carboxylic acid selected from the group consisting of alkanoic and cycloalkanoic acids whose acidic dissociation constant is below about 6.3×10^{-5} (at 25° C.), the solution containing the 2,2,2-trichloro-1-(N-methylpyrryl-2)--ethanol at a concentration in the range of from about 1 molar to about 8 molar and the protonic acid in an amount of up to about 8 weight percent based on the weight of the 2,2,2-trichloro-1-(N-methylpyrryl-2)-ethanol contained in the solution.

4,359,423
10H-1-ALKYL-10-OXABENZO,5,6 CYCLOHEPTA[1,2-G]PYRROLE-2-ACETIC ACIDS

Alexander C. Goudie, and Robert W. Ward, both of Harlow, England, assignors to Beecham Group Limited, England

Filed Jul. 25, 1980, Ser. No. 172,419
Int. Cl.³ C07D *209/52;* **A61K** *31/40*
U.S. Cl. 548—427 **5 Claims**

1. A compound of the formula:



wherein
R is alkyl of 1 to 4 carbon atoms;
R_1 is hydrogen or alkyl of 1 to 4 carbon atoms;

R_2 is hydrogen, halo, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, or
alkylthio of 1 to 4 carbon atoms; and the pharmaceutically acceptable salts of said compounds.

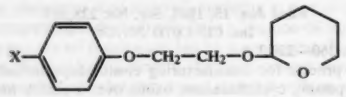
4,359,424

SUBSTITUTED PHENOXYETHOXYTETRAHYDROPYRAN

Clive A. Henrick, and Gerardus B. Staal, both of Palo Alto, Calif., assignors to Zoecon Corporation, Palo Alto, Calif.

Division of Ser. No. 166,649, Jul. 7, 1980, Pat. No. 4,304,924.
This application Jul. 9, 1981, Ser. No. 281,633
Int. Cl.³ C07D *309/12*
U.S. Cl. 549—416 **3 Claims**

1. A compound of the following formula:



wherein, X is halogen or COOH.

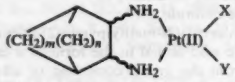
4,359,425

ORGANO-PLATINUM COMPLEX

Tetsushi Totani, Takarazuka, and Kenji Yamaguchi, Osaka, both of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Filed Mar. 31, 1981, Ser. No. 249,455
Claims priority, application Japan, Apr. 30, 1980, 55/58359
Int. Cl.³ C07F *15/00*
U.S. Cl. 260—429 R **19 Claims**

1. An organo-platinum complex of the formula:



wherein X and Y each or taken together is a mono- or bi-functional ligand selected from the group consisting of halogeno, nitrato, sulfonato, monocarboxylato (mono-functional), sulfato, and dicarboxylato (bi-functional);
and each of n and m is an integer of 1 or 2.

4,359,426

PROCESS FOR THE PRODUCTION OF AROMATIC ISOCYANATES CONTAINING AROMATICALLY BOUND SULFOCHLORIDE GROUPS

Dieter Dieterich, Leverkusen; Heinz U. Blank, Odenthal; Erich Wolters, Niederzier, and Norbert Langenfeld, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 2, 1981, Ser. No. 230,193
Claims priority, application Fed. Rep. of Germany, Feb. 8, 1980, 3004694
Int. Cl.³ C07C *119/048*
U.S. Cl. 260—453 AR **5 Claims**

1. A process for the production of an aromatic isocyanate containing aromatically bound sulfochloride groups, comprising:
(I) reacting
(a) an isocyanate or carbamic acid chloride which contains at least one aromatically bound isocyanate group and/or at least one aromatically bound carbamic acid chloride group, successively or simultaneously at 0° to 170° C. with
(b) a sulfonating agent and
(c) an organic compound containing at least one aromatically bound trihalo methyl group and
(II) removing hydrogen chloride from the reaction mixture at 20° to 170° C.

4,359,427

PROCESS FOR PRODUCING PEROXYDICARBONATES

Keith L. Gardner, Avon, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Jul. 27, 1981, Ser. No. 286,945
Int. Cl.³ C07C *179/18*
U.S. Cl. 260—463 **13 Claims**

1. A process for the continuous production of liquid peroxydicarbonates consisting essentially of continuously reacting in one or more reaction zones a chloroformate having the formula RO—C(O)—Cl, wherein R is an alkyl group containing from 3 to 16 carbon atoms, an aqueous hydrogen peroxide and an aqueous alkali metal hydroxide at a temperature in the range of about 0° C. to about 40° C., continuously decanting the reaction mixture through a gravity filtering zone into a separation zone wherein the mixture is separated into a liquid organic layer containing the reaction product and a water layer, decanting said liquid organic layer into a washing zone and washing the same with water, decanting into a second separation zone to separate the washed organic layer, and decanting said organic layer into an agitated aqueous solution containing from about 0.5% to about 10.0% by weight of an emulsifier, thereby forming an emulsion containing the peroxydicarbonate.

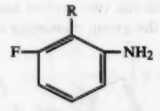
4,359,428

PREPARATION OF FLUORINATED ANTHRANILIC ACID AND ANTHRANILONITRILE

Peter Jacobs, Gruenstadt, and Heinz-Guenter Oeser, Dirmstein, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

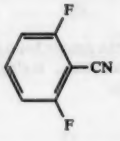
Filed Nov. 5, 1981, Ser. No. 318,588
Claims priority, application Fed. Rep. of Germany, Nov. 28, 1980, 3044904
Int. Cl.³ C07C *121/78, 101/58*
U.S. Cl. 260—465 E **14 Claims**

1. A process for the preparation of 6-fluoroanthranilic acid or its nitrile, of the formula



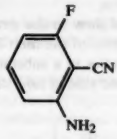
I

where R is —COOH or —CN respectively, wherein
(a) 2,6-difluorobenzonitrile of the formula



II

is reacted with ammonia and thereafter, if the acid is desired,
(b) the resulting 6-fluoroanthranilonitrile of the formula



is reacted with a basic compound.

4,359,429

MERCAPTOACETONITRILE SYNTHESIS

Eckart Mathias, Catonsville, Md., and Michael A. Shimanski, Smyrna, Ga., assignors to W. R. Grace & Co., New York, N.Y.

Continuation-in-part of Ser. No. 227,580, Jan. 23, 1981, abandoned, which is a continuation-in-part of Ser. No. 178,665, Aug. 18, 1980. abandoned. This application Aug. 28, 1981, Ser. No. 297,377

Int. Cl.³ C07C *120/00, 121/16*

U.S. Cl. 260—465.1 **6 Claims**

1. The process of forming mercaptoacetonitrile which comprises reacting in mass a substantially stoichiometric amount of chloroacetonitrile with a 10 to 50 weight % aqueous solution of sodium hydrosulfide at a temperature in the range −25° C. to −10° C. in an inert atmosphere at a pressure ranging from substantially atmospheric up to about 30 mm Hg above atmospheric and maintaining the reaction mixture at a temperature below 5° C. after the exotherm peak.

4,359,430

BETAINE RECOVERY PROCESS

Heikki O. Heikkilä; Jaakko A. Melaja; Dan E. D. Millner, all of Kantvik, and Jouko J. Virtanen, Kirkkonummi, all of Finland, assignors to Suomen Sokeri Osakeyhtio, Espoo, Finland

Continuation-in-part of Ser. No. 125,991, Feb. 29, 1980, abandoned. This application Feb. 24, 1981, Ser. No. 237,649

Int. Cl.³ C07C *101/12*

U.S. Cl. 260—501.13 **15 Claims**

1. A process for recovering betaine from molasses which comprises:

(a) diluting the molasses to provide a diluted molasses having a solids content within the approximate range of 25–50%,

(b) providing a chromatographic column of a salt of a polystryrene sulfonate cation exchange resin cross-coupled with from about 2 to about 12 weight percent of divinylbenzene, the resin being of uniform particle size and having a mean particle size within the range of about 20 to 400 U.S. mesh,

(c) submerging the column of resin in water,

(d) introducing the diluted molasses in uniform supply to the resin surface at the top of the column,

(e) eluting the molasses from the column with water to provide an eluate, and

(f) recovering from the downstream side of the resin bed a fraction which consists principally of betaine.

4,359,431

PREPARATION OF ARYLPHOSPHINIC ACIDS

Walter L. Magee, Jr., Danbury, Conn., and Arthur C. Bayer, Yorktown Heights, N.Y., assignors to Stauffer Chemical Company, Westport, Conn.

Filed May 4, 1981, Ser. No. 259,880

Int. Cl.³ C07F *9/48*

U.S. Cl. 260—502.4 R **6 Claims**

1. A process for the preparation of arylphosphinic acid comprising reacting an aromatic compound susceptible to electrophilic ring substitution with phosphorus trichloride in the presence of aluminum chloride to form a first reaction product and then reacting said first reaction product with aqueous phosphoric acid, at a strength of at least 10% by weight, to form an insoluble arylphosphinic acid and a soluble aluminum salt.

4,359,432

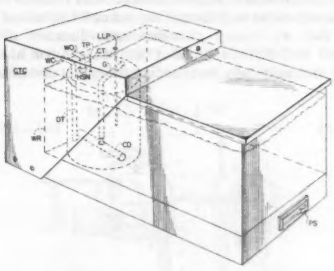
POST-MIX BEVERAGE DISPENSING SYSTEM SYRUP PACKAGE, VALVING SYSTEM, AND CARBONATOR THEREFOR

Jason K. Sedam, Dunwoody, Ga., and William R. Fuerst, Tucson, Ariz., assignors to The Coca-Cola Company, Atlanta, Ga.

Division of Ser. No. 84,434, Oct. 12, 1979, Pat. No. 4,306,667. This application Apr. 27, 1981, Ser. No. 257,945

Int. Cl.³ B01F *3/04*

U.S. Cl. 261—26 **1 Claim**



1. A carbonator comprising:

a refillable water reservoir tank with a removable lid to permit manual refilling thereof;

a carbonator tank disposed within said reservoir tank;

means for pumping water from said reservoir into said carbonator tank;

means for introducing carbon dioxide gas into said carbonator tank;

first liquid level detector means disposed in said reservoir tank for sensing when the water level therein falls below a predetermined minimum level;

second liquid level detector means disposed in said carbonator tank for sensing when said water level therein falls below a predetermined minimum level;

control means responsive to both said first and second liquid level detector means for enabling said means for pumping when said water level in said carbonator tank falls below said pedetermined level and disabling said means for pumping when said water level in said reservoir tank falls below said predetermined level;

third liquid level detector means disposed in said reservoir tank for sensing when the water level therein falls below a predetermined minimum level; and

control means responsive to said third liquid level detector means for disabling said pump means when water falls below said minimum level.

4,359,433

CONSTANT-PRESSURE CARBURETOR

Günter Härtel, Neuss, Fed. Rep. of Germany, assignor to Bosch & Pierburg System oHG, Neuss, Fed. Rep. of Germany

Filed Jul. 8, 1980, Ser. No. 166,826

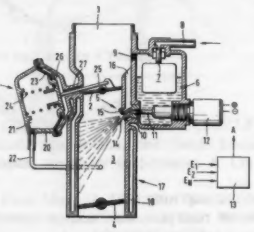
Claims priority, application Fed. Rep. of Germany, Jul. 28, 1979, 2930737

Int. Cl.³ F02M *15/04*

U.S. Cl. 261—142 **30 Claims**

1. In a constant-pressure carburettor for an engine comprising walls forming an axially extending fuel air/mixture chamber which operates under reduced pressure, walls forming an axially extending air inlet duct upstream from and in general axial alignment with said mixing chamber, a vacuum con-

trolled air intake valve between said air inlet duct and said mixing chamber, a suction duct downstream from said mixing chamber, a driver actuated throttle member between said mixing chamber and said suction duct, a float chamber, and fuel feed means through which fuel is drawn from said float chamber into said mixing chamber as required, the improvement wherein said fuel feed means comprises a fuel atomizer nozzle of high atomizing quality in one of said walls of said mixing chamber and opening obliquely into said mixing chamber with said nozzle located between and spaced from said air intake valve and said throttle member and directed in the downstream direction so that the fuel is directed obliquely across the axis of said mixing chamber toward the opposite surface thereof and in the downstream direction toward said throttle member, said atomizer nozzle having an axially extending central fuel supply passage with the axis of said passage at the outlet end thereof extending obliquely of the axis of said fuel air/mixing chamber and directed downwardly toward said throttle member and an annular atomizing air outlet concentrically surrounding the outlet end of said central



fuel supply passage and constricting and throttling the supplied atomizing air whereby the velocity vectors of fuel and atomizing air at said outlets of said nozzle differ in magnitude and direction, proportioning means for regulating the flow through said central fuel supply passage, said proportioning means including an electronically controlled valve, and wall means in combination with said air inlet duct and said walls forming said mixing chamber forming a passage for supplying atomizing air to said atomizing air outlet of said nozzle, and heating means located in said walls of said mixing chamber downstream of said air intake valve and extending to said throttle member for heating the inner surface of said mixing chamber when the engine is cold and during normal operating conditions, said fuel atomizer nozzle is arranged to spray and atomize the fuel in the path of the air flow through said mixing chamber from said air inlet duct and any atomized fuel impinging on the heated surface of said mixing chamber is vaporized thereby avoiding precipitation of the fuel on the inner surface of said mixing chamber and affording a fine and large area distribution of the fuel mist within said mixing chamber.

4,359,434

PROCESS FOR GRANULATING MOLTEN MATERIAL

Nils Tiberg, Oxelösund, Sweden, assignor to Svenskt Stal Aktiebolag, Stockholm, Sweden

PCT No. PCT/EP78/00014, § 371 Date May 7, 1979, § 102(e) Date May 7, 1979, PCT Pub. No. W079/00132, PCT Pub. Date Mar. 22, 1979

PCT Filed Sep. 5, 1978, Ser. No. 116,672

Claims priority, application Fed. Rep. of Germany, Sep. 6, 1977, 2740097

Int. Cl.³ B01J *2/16*

U.S. Cl. 264—7 **37 Claims**

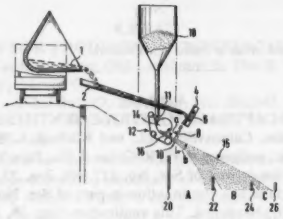
1. A process for granulating slag melts, glass melts, ceramic melts and melts of metal alloys, comprising the steps of:

(A) creating a flowing stream of molten material;

(B) widening said stream of molten material to form a melt film as it flows;

(C) creating a substantially freely flowing stream of fine-grained, said particles;

(D) imparting a rate of flow to the stream of solid particles that is greater than that of the melt film and directing the stream of solid particles in a substantially uniform direction against a widened side of said stream of molten material at an incidence angle which will atomize said stream of molten material into a fan-shaped distribution of droplets over at least part of an opposite angle to the incidence angle;



(E) cooling said droplets into a substantially fine-grained granulate; and

(F) collecting the fine-grained granulate.

4,359,435

METHOD FOR MANUFACTURING PLASTIC PRODUCTS

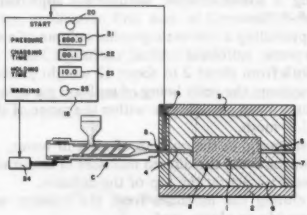
Yamato Kogure, 5821-663 Masago-cho, Niigata-shi, Niigata, Japan

Continuation-in-part of Ser. No. 87,540, Oct. 23, 1979, abandoned, Ser. No. 69,270, Aug. 24, 1979, abandoned, and Ser. No. 948,675, Oct. 5, 1978, abandoned. This application Nov. 20, 1981, Ser. No. 323,305

Claims priority, application Japan, Apr. 19, 1978, 53-46048; Jun. 25, 1979, 54-79945

Int. Cl.³ B29C *5/00*; B29F *1/08*

U.S. Cl. 264—40.5 **8 Claims**



1. A method for producing one-of-a-kind molded resin articles having both a thick portion and thin portion to be molded simultaneously comprising the steps of:

(a) forming a plaster mold inside a metal jacket, said mold including a sprue runner passageway an external pressure injection opening in said jacket to a portion of an interior plaster mold cavity corresponding to said thick portion and an air vent passageway from the exterior of said jacket to a portion of said interior plaster mold said interior plaster mold cavity corresponding to said thin portion, said sprue runner having a diameter dimensions of 0.5 to 20 mm and said air vent having corresponding diameter of 0.1 to 5.0 mm, and the diameter of said air vent being substantially smaller than the diameter of said sprue runner, whereby resin injected into said mold will completely harden within said air vent prior to the hardening of said injected resin in

said sprue runner and in said mold cavity thick portion connected thereto;

(b) providing pressure sensor means in said metal jacket for sensing the internal pressure of the molten resin within said runner passageway;

(c) establishing a predetermined maximum operating pressure of from 30–1200 kg/cm for injecting molten resin into said plaster mold, said predetermined maximum operating pressure momentarily exceeding a pressure limit of said plaster mold;

(d) establishing a predetermined maximum charging time of less than 1 second for injecting said molten resin inside said plaster mold;

(e) establishing a predetermined setting time of less than 60 seconds but of sufficient duration to permit said resin in said sprue runner to completely harden and prevent any further resin to be injected into said mold;

(f) plasticizing the molding resin by a combination of mechanical shearing and heat;

(g) injecting the plasticized resin into said plaster mold by means of said injection opening at a high injection speed of about 0.01–2.0 seconds, while monitoring the internal resin pressure sensed by said sensing means to determine whether said air vent, said mold cavity and said sprue runner have been filled with molten resin and the resin in said air vent has begun to harden within said established maximum charging time;

(h) accelerating the hardening of the injected molten resin within said mold cavity thick portion relative to that with said sprue runner passageway sufficiently to harden said resin in said thick portion before said resin hardens in said sprue runner passageway; and

(i) once said mold cavity has been so sealed by hardening of resin in said vent, maintaining the internal resin pressure as measured by said sensing means at said maximum operating pressure for said predetermined setting time.

4,359,436

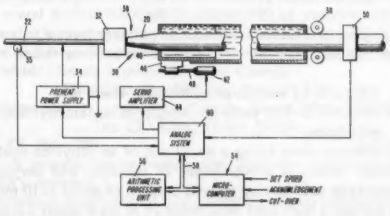
METHODS OF AND SYSTEMS FOR CONTROLLING THE EXPANSION OF CELLULAR PLASTIC INSULATION IN THE MANUFACTURE OF INSULATED CONDUCTORS

Joseph G. Henderson, Bel Air; Alan S. Markham, Baltimore, and Richard D. Neumyer, Reisterstown, all of Md., assignors to Western Electric Company, Inc., New York, N.Y.

Filed Apr. 29, 1981, Ser. No. 258,844

Int. Cl.³ B29D *27/00*; B29F *3/10*

U.S. Cl. 264—40.6 **18 Claims**



1. A method of controlling the expansion of cellular insulation in the manufacture of an insulated conductor having a conductive element and a layer of cellular insulation extruded thereabout, which comprises the steps of:

preheating a bare conductive element to an initial temperature;

advancing the preheated conductive element through an extruder whereat a layer of cellular insulation is extruded thereabout to form an insulated conductor;

quenching the insulated conductor at a point to stop the expansion of the layer of cellular insulation;

measuring the coaxial capacitance of the insulated conductor subsequent to the step of quenching;

generating an error signal which is the difference between the measured capacitance and a standard capacitance value; and

adjusting the temperature of the conductive element as a function of line speed and the error signal and adjusting the point of quenching the insulated conductor as a function of the error signal whereby the adjusting of the temperature and the point of quenching controls the expansion of the layer of cellular insulation.

4,359,437

METHOD AND APPARATUS FOR PRODUCING A THIN-WALLED ARTICLE OF SYNTHETIC RESIN, IN PARTICULAR A LARGE-SIZED ARTICLE

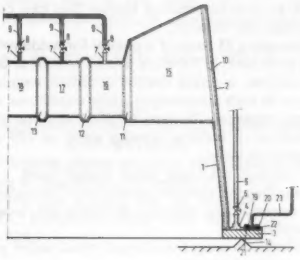
Adolf le Comte, New Rochelle, N.Y., assignor to Le Comte-Holland B.V., Vianen, Netherlands

Filed Mar. 10, 1981, Ser. No. 242,295

Claims priority, application Netherlands, Mar. 11, 1980, 8001450

Int. Cl.³ B29C *5/00*

U.S. Cl. 264—102 **5 Claims**



1. A method of manufacturing a thin-walled article of synthetic resin, in particular a large-sized article, and using a mold having an inner and outer, shape defining template which define therebetween a cavity for forming said thin-walled article, at least one of said templates being responsive to pressure differentials between said cavity and the external for varying the spacing therebetween, said method comprising the steps of:

establishing a partial vacuum in the cavity between said templates via plural discharge apertures in at least one of said two templates;

supplying synthetic curable resin to said cavity via one or more apertures in at least one of said templates under pressure;

controlling the application of said partial vacuum and synthetic resin supply pressure by increasing said pressure and removing said partial vacuum so that said templates recede from each other in at least a portion thereof whereby a stagnation zone in said cavity between said portions is eliminated; and

restoring said partial vacuum and restoring the pressure of the resin supply to the pressure before the increase thereof.

5. Apparatus for manufacturing a large-sized, thin-walled article comprising:

first and second templates positioned to define a cavity therebetween corresponding to the thin-walled article;

said templates having a fixed shape to define the exterior surface of said thin-walled article by the shape of the inner facing surfaces of said templates;

a plurality of cores within said cavity of predetermined structural shapes;

a layer of glass fiber material between said cores and said templates;

means for applying synthetic resin under variable pressure to said cavity;

at least one of said templates being sufficiently flexible in the region of said cores to permit said templates to recede from each other under the influence of pressure applied to said cavity relative to the exterior thereby to facilitate the flow of fluent resin material between said cores and said templates;

means for applying a partial vacuum to said cavity through apertures in at least one of said templates;

means for providing removal of said vacuum between portions of said templates and for elevating the pressure of the supplied synthetic resin to cause said templates to recede from each other in said portion whereby stagnation zones at said portions are eliminated.

4,359,438

PROCESS FOR MOLDING CORROSION RESISTANT FUEL CELL COLLECTING PLATES

James T. Hoggins, Columbus, and Golden F. Watts, Delaware, both of Ohio, assignors to Ashland Oil, Inc., Ashland, Ky.

Filed Sep. 21, 1981, Ser. No. 303,760

Int. Cl.³ B29D *7/00*

U.S. Cl. 264—105 **7 Claims**

1. A process for making bipolar fuel cell collecting plates comprising the steps of:

(a) blending 25 parts of a phenol formaldehyde resin having a mole ratio of 1.0 mole phenol to 0.60 to 0.90 mole formaldehyde, a curing amount to reduce weight loss on exposure to high temperature acidic conditions, of hexamethylene tetramine, 75 parts of graphite filler and an effective amount of furfural wetting agent in 100 grams of resin graphite blend;

(b) charging the blend into a heated mold;

(c) heating the charged mold under pressure;

(d) releasing the pressure allowing the escape of gaseous products;

(e) further heating the charged mold under pressure;

(f) cooling the mold;

(g) removing the formed plate; and

(h) postcuring the formed plate.

4,359,439

METHOD AND APPARATUS FOR PRODUCING AN EXTRUDED PLASTIC BAR WITH PLURAL SURFACE CHARACTERISTICS

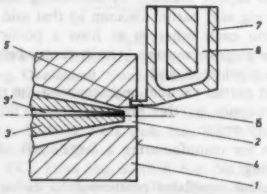
Günter Fritsch, Ennepetal; Heinz Vollmer, and Walter Schmitz, both of Wuppertal, all of Fed. Rep. of Germany, assignors to Gebr. Happich GmbH, Fed. Rep. of Germany

Filed Jun. 8, 1981, Ser. No. 271,245

Claims priority, application Fed. Rep. of Germany, Aug. 28, 1980, 3032347

Int. Cl.³ B29F *3/08*

U.S. Cl. 264—135 **7 Claims**



1. Method for producing an extruded plastic sectional bar, or the like profiled element, wherein the bar, or the like, has a first and a second longitudinally extending section measured around the bar and the first section has a surface that is duller than the surface of the second section, the method comprising:

extruding the bar, or the like through an extrusion tool having an extrusion outlet, and while extruding the bar, exposing the first and second sections of the bar to different temperatures at the extrusion outlet at the respective areas of the extrusion tool which the first and second sections of the bar pass.

3. Apparatus for producing an extruded plastic sectional bar, or the like profiled element, wherein the bar, or the like, has a first and a second longitudinally extending section measured around the bar and the first section has a surface that is duller than the surface of the second section, the apparatus comprising:

an extrusion tool shaped for extruding and shaping the sectional bar, or the like, and for defining the surface thereof, the tool having an outlet end region which is divided in the outlet end region into a first and a second zone which are placed for being contacted by first and second sections of the bar, respectively, as the bar is extruded;

means for causing the first zone to be at a first temperature while the second zone is at a second, different temperature.

4,359,440

COEXTRUSION PROCESS FOR PREPARING A COMPOSITE POLYMER FILM CONSTRUCTION

Pallavoor R. Lakshmanan, Houston, Tex., assignor to Gulf Oil Corporation, Pittsburgh, Pa.

Division of Ser. No. 209,812, Nov. 24, 1980, Pat. No. 4,324,872. This application Oct. 22, 1981, Ser. No. 313,555

Int. Cl.³ B32B *31/30*

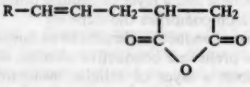
U.S. Cl. 264—171 **1 Claim**

1. In a coextrusion process for preparing a composite polymer film construction having polymers in the two surface layers which are fusion-bonded to each other by an intermediate polymer layer in which three polymer streams are fed into three channels of a film die, and the three polymer streams flow into the film die and are extruded to form an extrudate in which the three polymer streams form a film having three fusion-bonded layers, the improvement which consists of employing an ethylene polymer or an isotactic propylene polymer as the polymer to form each of the two surface layers and employing to form the intermediate polymer layer a polymeric composition consisting essentially of an intimate fusion blend of;

a. 100 parts by weight of an ionomer resin, and

b. about 5 to 900 parts by weight of an alkenyl succinic anhydride;

said ionomer resin being a metal salt of an ethylene-acid copolymer which is a copolymer of ethylene and acrylic or methacrylic acid having an acid content of about 1–10 mol % and having a high load melt index of at least about 1.0 and a normal load melt index of up to about 50; and said alkenyl succinic anhydride having the structure:



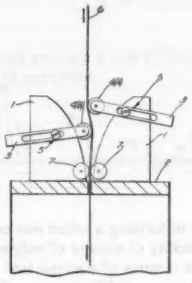
where R is an alkyl group containing about 13 to 49 carbon atoms.

4,359,441

POLYMERIC FILAMENTS AND PROCESS FOR FORMING SUCH MATERIAL

Ivan Barker, and Geoffrey Marshall, both of Harrogate, England, assignors to Imperial Chemical Industries, Limited, London, England

Continuation of Ser. No. 780,074, Mar. 22, 1977, abandoned. This application Aug. 24, 1979, Ser. No. 69,435
Claims priority, application United Kingdom, Mar. 23, 1976, 11633/76
Int. Cl.³ D01D 5/10
U.S. Cl. 264—176 F 11 Claims



1. A process for forming polyethylene terephthalate filamentary material comprising:

(a) extruding the polyethylene terephthalate while molten to form filaments;

(b) advancing the molten filaments through a solidification zone;

(c) advancing the solidified filaments through a tensioning zone comprising one or more non-rotatable filament contact guides without inducing substantial drawing thereof within the zone;

(d) advancing the solidified filaments through a subsequent treatment zone into which fluid heated to a temperature above the glass-transition temperature of the filaments is introduced into the treatment zone at a point close to the entry point of the filaments into the zone;

(e) withdrawing the filaments from the treatment zone at a velocity of from 1000 to 6000 meters/minute.

4,359,442

PROCESS FOR THE TWIN-WEB HOT EMBOSSING OF THERMOPLASTIC FILM

John H. Cleminson, Orangeville; Brian R. Bowman, Milton, and Raitis Lauge, Beaconsfield, all of Canada, assignors to Union Carbide Canada Limited, Toronto, Canada

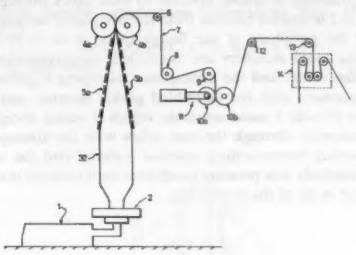
Filed Dec. 31, 1980, Ser. No. 221,739
Claims priority, application Canada, Jan. 8, 1980, 343284
Int. Cl.³ B29C 17/00, 25/00
U.S. Cl. 264—280 5 Claims

1. A process for embossing thermoplastic polyolefin film which comprises.

(a) passing a length of said film consisting of two superimposed webs in direct face-to-face contact into a heating zone to heat said webs to a temperature above the vicat softening point but below the melting point of said film each of said webs being free from release agent coated on the interface surfaces of said superimposed webs;

(b) passing the heated superimposed webs between a pair of embossing rolls at least one of which has an engraved metallic surface cooled to a temperature sufficient to cool said webs to below the vicat softening point;

(c) passing said webs into the nip between a pair of counter rotating driven rolls, each having a high friction surface, separating said webs downstream of said nip by each of said webs maintaining contact with the surface of its respective driven roll, each having a high friction surface, separating said webs downstream of said nip by each of said webs maintaining contact with the surface of its respective driven roll downstream of said nip, passing each of said webs



around a sufficient portion of the circumference of its respective driven roll and under sufficient tension to prevent slippage, releasing each of said webs from its respective driven roll by continuing passage over a co-operating roll, then;

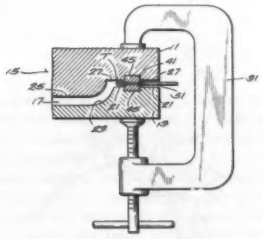
(d) drawing each of said webs to a separate wind-up station.

4,359,443

VENTING ARRANGEMENT FOR MATCHED MOLDS AND METHOD

Nathaniel E. Michaels, Sheboygan Falls, Wis., assignor to Fiber Glass Tooling & Specialties, Sheboygan Falls, Wis.

Filed Sep. 2, 1980, Ser. No. 183,102
Int. Cl.³ B29C 1/00; B29F 1/00; B29G 3/00
U.S. Cl. 264—328.2 9 Claims



1. A mold assembly for molding a thermosetting resinous article, said mold including first and second mold members which are fabricated of resinous material and which are assembled together to define a mold cavity including a main portion which defines the desired article and a flange space extending from the perimeter of the main portion, said first and second mold members each including a central surface defining the cavity main portion and a peripheral surface extending outwardly from said central surface to partially define said flange space, a gasket captured between said peripheral surfaces and spaced from said central surfaces to define the periphery of said flange space, and a plurality of vent passages extending in spaced relation to each other through said gasket in spaced relation from said peripheral surfaces and around the periphery of said flange space to provide communication between said cavity and the atmosphere.

7. A process for making an article from a thermosetting resin, said process comprising the steps of providing a pair of opposed mold members each fabricated of resinous material and including a central surface which, when the pair of mold members are assembled in opposing relation, define a central

cavity, and a peripheral flange surface which extends outwardly from the central surface, providing a gasket member, providing a plurality of vent tubes, assemblying the mold members in opposed relation and with the gasket member located between the peripheral surfaces in spaced relation from the central surfaces to provide a flange space and with the vent tubes extending in spaced relation to each other through the gasket and in spaced relation from the peripheral surfaces and around the periphery of the flange space so as to provide, when the mold members are assembled, communication between the cavity and the atmosphere, clamping together the mold members with the assembled gasket member and vent tubes to provide a mold assembly which is sealed except for communication through the vent tubes with the atmosphere, and inserting thermosetting resinous material into the cavity under relatively low pressure conditions until resinous material is present in all of the vent tubes.

4,359,444

METHOD FOR FORMING FILAMENTS

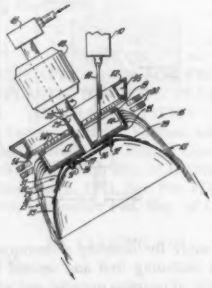
Hashmuk G. Shah, Granville, and G. Richard Machlan, Newark, both of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation of Ser. No. 57,138, Jul. 12, 1979, Pat. No. 4,277,436, which is a continuation of Ser. No. 900,408, Apr. 26, 1978, abandoned. This application Dec. 10, 1980, Ser. No. 214,823

The portion of the term of this patent subsequent to Jul. 7, 1998, has been disclaimed.

Int. Cl.³ D01D *5/12*

U.S. Cl. 264—518 **3 Claims**



1. A method of forming filaments comprising:

forming a generally cylindrical rotating veil of interengaging primary fibers from a rotor containing filaments forming material;

providing a gaseous blast external to said veil generally along the axis of rotation of the rotor;

advancing said veil substantially along a path of advancement along the axis of rotation of said rotor;

supplying a fluid to the interior of the veil by a conduit having a discharge orifice within said veil;

providing a continuous surface of revolution within said veil along the path of advancement of said veil;

and moving the fluid over the exterior of said surface according to the Coanda effect along the axis of rotation into engagement with said veil to attenuate said primary fibers into filaments.

4,359,445

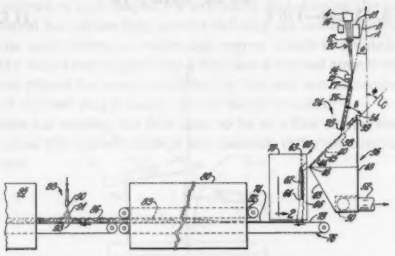
METHOD FOR PRODUCING A LOFTED MAT

John L. Kane, and Vikas M. Nadkarni, both of Newark, Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation of Ser. No. 113,994, Jan. 21, 1980, abandoned. This application Jun. 1, 1981, Ser. No. 268,962

Int. Cl.³ B24J *5/00*

U.S. Cl. 264—518 **15 Claims**



1. The method of forming a lofted mat comprising:

supplying a plurality of streams of polymeric material;

attenuating said streams of material into filaments through the action of a stream of fluid moving from an attenuation means; said filaments being entrained in said fluid moving from said attenuation means, said filaments having non-uniform, residual stresses established therein;

moving said stream of fluid and filaments along a first surface positioned intermediate said attenuation means and a foraminous surface;

directing said stream of fluid and filaments into said foraminous surface obliquely oriented with respect to said first surface such that a first portion of said fluid separates from the filaments and passes through said foraminous surface and a second portion of said fluid moves said filaments along the foraminous surface:

controlling the relative amounts of said first portion and said second portion of the fluid separating at the foraminous surface to control the movement of the filaments therealong;

collecting said filaments in a randomly dispersed, substantially uniform layer having a first thickness;

passing said layer through crimp inducing means adapted to permit said residual stresses to release to crimp said filaments to form said lofted mat having a generally uniform second thickness greater than said first thickness.

4,359,446

SWEEP ELL PRODUCTION METHOD

Joseph A. Levens, Houston, Tex., assignor to Nipak, Inc., Dallas, Tex.

Division of Ser. No. 88,418, Oct. 26, 1979, Pat. No. 4,273,523. This application Feb. 23, 1981, Ser. No. 237,448

Int. Cl.³ B29C *17/07, 17/14;* **B29D** *23/04*

U.S. Cl. 264—568 **5 Claims**

1. A method for producing a pipe ell having a predetermined radius of curvature, comprising the steps of:

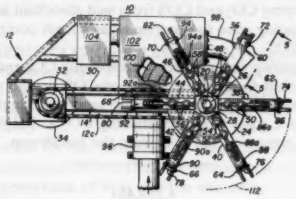
(a) producing extruded pipe,

(b) sizing said extruded pipe to have predetermined wall thickness and outside diameter,

(c) directing said extruded pipe through a curved sleeve having a curvature corresponding to said predetermined radius of curvature, and

(d) clamping pulling arms to said extruded pipe and pivoting the pulling arms to draw said extruded pipe from said

sleeve along an arc having a predetermined radius of curvature, said arc being coplanar with the axis of said



sleeve to thereby produce a pipe ell having said predetermined radius of curvature.

4,359,447

AUTOMATIC MULTICHANNEL APPARATUS FOR PERFORMING EMERGENCY ANALYSES, IN PARTICULAR CHEMICAL-CLINICAL ANALYSES ON BIOLOGICAL FLUIDS

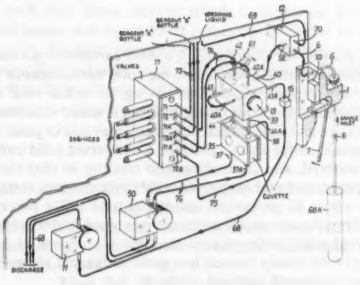
Henry H. Welch, No. 1262, Via Tiburtina Km. 12.600, 00131, Rome, Italy

Filed Jan. 2, 1981, Ser. No. 222,181

Claims priority, application Italy, Jan. 7, 1980, 47531 A/80

Int. Cl.³ G01N *35/06, 21/11;* G06F *15/42*

U.S. Cl. 422—63 **14 Claims**



1. An automatic multichannel apparatus for performing urgency analyses which comprises, in combination, an arm carrying a tube arranged for aspirating a sample directly from a test tube, a rotating distributor for dividing the sample into several segments correlated with the number of desired analyses comprising a substantially cylindrical body provided with diametral passages, rotatably and sealingly mounted within a housing provided with passages that selectively correspond with said diametral passages according to the angular position of said rotating body, means for aspirating a reagent and transferring this reagent together with a sample segment into a cuvette associated with a photometric measurement unit, and means for the processing of the data of the measurement and for displaying and printing out the results.

4,359,448

FLUIDIZED BED REACTOR FOR EXOTHERMIC REACTIONS

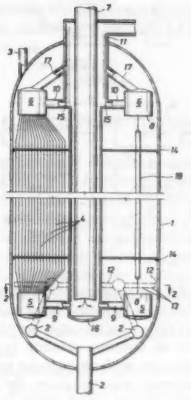
Pieter J. Schuurman, and Marius B. Teekens, both of The Hague, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Mar. 16, 1981, Ser. No. 244,462

Claims priority, application Netherlands, Apr. 15, 1980, 8002172

Int. Cl.³ F27B *15/16;* B01J *8/44*

U.S. Cl. 422—143 **6 Claims**

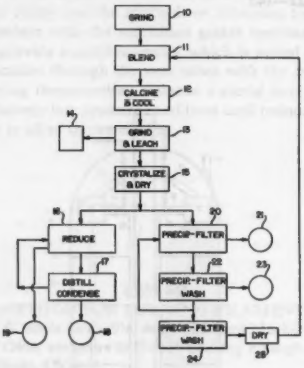


1. A reactor provided at the bottom with one or more pipes for gaseous reaction media and at the top with one or more outlet pipes for reaction product, which reactor is provided with a number of bundles of parallel axial tubes for a coolant to be passed through the reactor concurrently with the reaction media, means maintaining said tubes for the greater part of their length substantially uniformly distributed over the cross-section of the reactor, the tubes of each bundle being connected to a header and manifold space located within the reactor, said header and manifold, which being regularly arranged around an axial supply pipe for the coolant, are provided with flat tube sheets toward which the tubes of a bundle converge and to which they are connected, said manifold spaces are connected to the supply pipe by means of radial pipes and the header spaces are also connected by means of radial pipes with a coolant discharge pipe arranged concentrically around the supply pipe, said concentrically arranged axial supply pipe and said coolant discharge pipe passing through a wall of said reactor, said inlet pipe or pipes are branched in a stellate configuration so that the branches are between or just downstream of the manifold spaces and said branches are each provided with a number of gas outflow openings which are suitable to keep in the fluidized state during operation a finely grained mass of catalyst particles present in the reactor, wherein said axial supply pipe is surrounded by a second concentric pipe one extremity of which is connected to the lower extremity of the coolant discharge pipe, the other extremity debouching with the supply pipe into a space to which the radial pipes leading to the manifold spaces are connected.

4,359,449
PROCESS FOR MAKING TITANIUM OXIDE FROM TITANIUM ORE

Robert A. Hard, Laguna Beach, and Martin A. Prieto, Diamond Bar, both of Calif., assignors to Occidental Research Corporation, Irvine, Calif.

Filed Dec. 15, 1980, Ser. No. 216,056
Int. Cl.[3] C01G *23/047*
U.S. Cl. 423—82 7 Claims



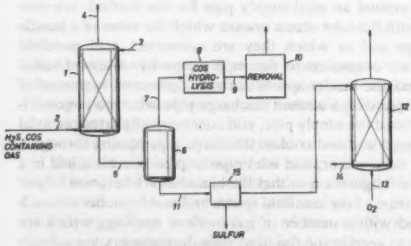
1. A process for the preparation of titanium dioxide from an alkalimetal fluotitanate selected from the group consisting of K_2TiF_6 and Na_2TiF_6 which comprises the steps of:

(a) contacting an aqueous solution comprising said alkalimetal fluotitanate with an aqueous solution comprising an alkaline material selected from the group consisting of alkaline and alkaline earth metal hydroxides, oxides or carbonates, which do not form insoluble fluoride salts at conditions whereby said alkalimetal fluotitanate is converted to titanium dioxide in the resulting solution, and (b) separating said titanium dioxide from said resulting solution as the rutile crystal modification.

4,359,450
PROCESS FOR THE REMOVAL OF ACID GASES FROM GASEOUS STREAMS

George C. Blytas, and Zaida Diaz, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed May 26, 1981, Ser. No. 267,195
Int. Cl.[3] B01D *53/34;* C01B *17/04*
U.S. Cl. 423—226 36 Claims



1. A process for the removal of H_2S, CO_2, and COS from a sour gaseous stream containing H_2S, CO_2, and COS comprising:

(a) contacting said sour gaseous stream in a contacting zone with a lean CO_2, COS-selective liquid absorbent mixture containing an effective amount of an oxidizing reactant under conditions to produce a sweet gaseous stream and a liquid absorbent admixture containing absorbed CO_2, COS, solid sulfur, and a reduced reactant;

(b) stripping CO_2 and COS from said absorbent admixture in a stripping zone to produce a gas stream comprising CO_2 and COS;

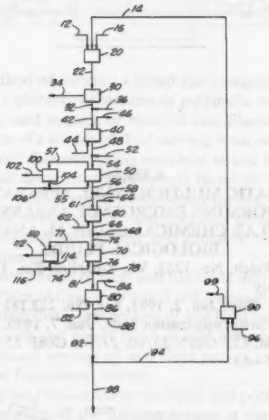
(c) contacting the gas stream comprising CO_2 and COS with a catalyst for the hydrolysis of COS, in the presence of water, and under conditions to react COS and water and produce a gas stream containing CO_2 and H_2S;

(d) and removing the H_2S from the gas stream.

4,359,451
DESULFURIZATION OF CARBONACEOUS MATERIALS

Ann B. Tipton, Diamond Bar, Calif., assignor to Occidental Research Corporation, Irvine, Calif.

Filed Sep. 5, 1978, Ser. No. 939,688
Int. Cl.[3] C10L *9/04;* C01B *17/16, 31/02*
U.S. Cl. 423—563 31 Claims



1. A process for desulfurizing a solid carbonaceous material comprising treating a sulfur-bearing solid carbonaceous material having organic sulfur and having an initial total sulfur percent with a gas comprising hydrogen under conditions of temperature and time sufficient to transform said organic sulfur to inorganic sulfur and to produce a converted solid carbonaceous material, and controlling said treating so that the total sulfur percent of said converted solid carbonaceous material is at least about 80 percent of said initial total sulfur percent by controlling the amount of said hydrogen used; and treating said converted solid carbonaceous material to remove at least a portion of the thusly formed inorganic sulfur and to produce a solid carbonaceous material product.

4,359,452
PROCESS FOR THE PRODUCTION OF INSOLUBLE SULFUR

Kyung S. Shim, Irvington, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Dec. 10, 1980, Ser. No. 214,945
Int. Cl.[3] C01B *17/12*
U.S. Cl. 423—567 R 5 Claims

1. A process for the preparation of a stable insoluble sulfur product having improved flow characteristics and containing substantially no tailings which comprises forming a mixture of vaporized sulfur with hydrogen sulfide in an amount ranging from about 1×10^{-6}% to about 5% hydrogen sulfide by weight of sulfur and in the essential absence of hydrocarbon

oil, quenching said mixture in a quenching medium to form said insoluble sulfur product and separating said insoluble sulfur product from said quenching medium.

4,359,453

ATHEROSCLEROSIS TREATMENT METHOD

Robert T. Gordon, 4936 W. Estes, Skokie, Ill. 60076

Filed Apr. 7, 1978, Ser. No. 894,504
Int. Cl.[3] A61K *43/00, 49/00;* G01T *1/00*
U.S. Cl. 424—1 5 Claims

1. A process for the treatment of atherosclerosis in living tissue by application of external electromagnetic energy capable of the generation of heat and the alteration of biophysical properties intracellularly and extracellularly to induce resolution of atherosclerotic lesions comprising:

intravenously injecting into the patient minute ferromagnetic, paramagnetic or diamagnetic particles capable of being inductively heated and of size less than 1 micron,

selectively absorbing said minute particles intracellularly and extracellularly into the atherosclerotic lesion,

subjecting the patient to an alternating electromagnetic field to inductively heat and alter the biophysical properties of the minute particles and thereby the atherosclerotic lesions,

continuing the inductive heating of said particles to resolve the atherosclerotic lesions.

4,359,454

METHOD AND COMPOSITION CONTAINING MCA FOR FEMALE STERILIZATION

Allan S. Hoffman, Seattle, Wash., assignor to World Health Organization, Geneva, Switzerland

Filed Dec. 16, 1980, Ser. No. 217,149
Int. Cl.[3] A61K *49/04*
U.S. Cl. 424—5 7 Claims

1. In a method of female sterilization which comprises instilling liquid water-free methyl cyanoacrylate in the oviduct whereby the methyl cyanoacrylate polymerizes and degrades to induce an inflammatory response on the lining of the oviduct such that dense fibrous tissue is deposited across the oviduct lumen and the oviduct is thereby occluded by natural scar tissue, the improvement which comprises using the methyl cyanoacrylate polymer with ethyl-10-(iodophenyl) undecanoate so that the positioning of the methyl cyanoacrylate instilled in the oviduct can be determined by X-ray eximination.

4,359,455

DIAGNOSTIC TEST COMPOSITION FOR DENTAL CARIES ACTIVITY

Masakazu Nakamura, and Kikuko Hamato, both of Takatsuki, Japan, assignors to Sunstar Hamigaki Kabushiki Kaisha, Takatsuki, Japan

Filed Oct. 30, 1979, Ser. No. 89,319
Int. Cl.[3] C12Q *1/00;* G01N *31/22, 33/48, 33/52*
U.S. Cl. 424—7 2 Claims

1. A method for determining dental caries activity which comprises

collecting a sample of dental plaque, mixing the collected plaque with a composition consisting essentially of 2.5 to 40% by weight of a saccharide selected from the group consisting of sucrose, glucose and fructose, 0.0001 to 0.05% by weight of a pH indicator selected from the group consisting of resazurin, lacmoid, methyl red and alizarin, and remainder of a medium selected from the group consisting of water and an aqueous alcohol solution, said composition having a pH range of 6.5 to 7, and after a predetermined period of time, observing any color change of the mixture to evaluate acid production.

4,359,456

ANTIPERSPIRANT ACTIVITY OF BASIC ALUMINUM COMPOUNDS

Keith Gosling, Richmond; Nigel L. Jackson, Otley; Nicholas H. Leon, Isleworth; Victor J. Mulley, Reading, and Michael J. Baldock, Isleworth, all of England, assignors to Lever Brothers Company, New York, N.Y.

Continuation of Ser. No. 51,523, Jun. 25, 1979, abandoned, which is a continuation-in-part of Ser. No. 910,988, May 30, 1978, abandoned, which is a continuation of Ser. No. 758,834, Jan. 12, 1977, abandoned. This application Dec. 5, 1980, Ser. No. 213,450
Claims priority, application United Kingdom, Jan. 14, 1976, 1401/76; Jun. 23, 1978, 27755/78
Int. Cl.[3] C01F *7/48*
U.S. Cl. 424—68 9 Claims

1. Process for improving the antiperspirant activity of a basic aluminum compound consisting essentially of a complex having the empirical formula:

$$Al_2(OH)_{6-a}X_a$$

where X is Cl, Br or I, and a is about 0.3 to about 4, comprising the steps of:

(i) heating an aqueous liquid solution containing the basic aluminum compound at an aluminum concentration of 2.5 to 8.5% by weight of the solution at a temperature of 50° to 140° C. for a period of time sufficient to impart to said basic aluminum compound the property of:

(a) having a Size Exclusion Chromatography Test Band having a relative retention time corresponding to Band III of the Standard Basic Aluminum Chloride Solution Size Exclusion Chromatogram; and

(b) having a Band III Percent Aluminum Value of at least 20 percent; and

(ii) cooling the aqueous liquid to ambient temperature;

thereby obtaining an aqueous liquid solution containing a basic aluminum compound having substantially the same empirical formula as the basic aluminum compound in the aqueous liquid solution prior to said heating and having enhanced anti-perspirant activity.

4,359,457

ANTI THY 1.2 MONOCLONAL ANTIBODY-RICIN HYBRID UTILIZED AS A TUMOR SUPPRESSANT

David M. Neville, Jr., 9624 Parkwood Dr., Bethesda, Md. 20014, and Richard J. Youle, 9629 Old Spring Rd., Kensington, Md. 20795

Filed Sep. 30, 1980, Ser. No. 186,735
Int. Cl.[3] A61K *39/44, 45/05;* G01N *33/68*
U.S. Cl. 424—85 3 Claims

1. A tumor suppressive cytotoxic reagent active on murine lymphoma cancer systems which consists of anti Thy 1.2 monoclonal antibody-ricin.

3. A murine tumor-suppressive reagent composition comprising an effective amount therefor of the hybrid protein anti Thy 1.2 monoclonal antibody-ricin and lactose in a pharmacological carrier.

4,359,458

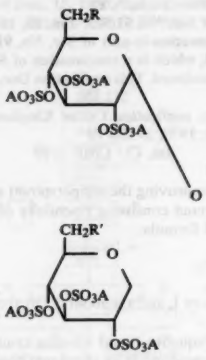
O-β, -D (AND O-α,, -D) MULTIGALACTOPYRANOSYL, XYLOPYRANOSYL AND GLUCOPYRANOSYL SULFATE SALTS

Vijay G. Nair, Piermont, N.Y.; Joseph P. Joseph, Montvale, N.J.; Arthur J. Lewis, Congers, and Seymour Bernstein, New City, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

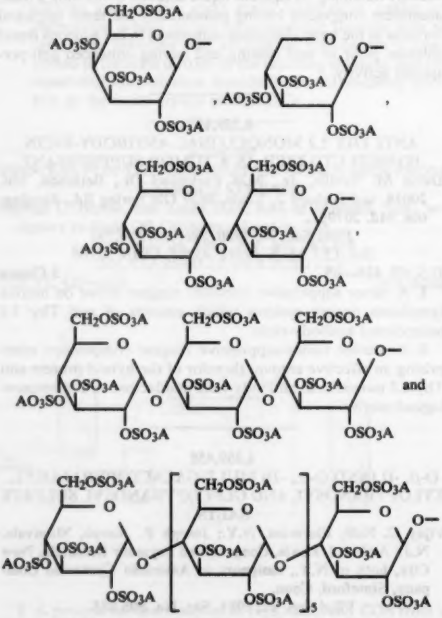
Filed Sep. 28, 1981, Ser. No. 305,885
Int. Cl.[3] A61K *71/30;* C07H *5/08, 3/06, 37/00*
U.S. Cl. 424—180 34 Claims

15. A method of inhibiting the complement system in a body fluid which comprises subjecting said body fluid to the action

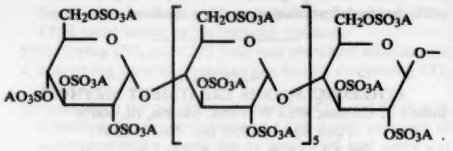
of an effective complement inhibiting amount of a pharmaceutically acceptable compound selected from those of the formula:



wherein A is a nontoxic pharmaceutically acceptable cation salt, wherein the salt forming moiety is selected from the group consisting of alkali earth metal, ammonia and substituted ammonia selected from the group consisting of trialkylamine (C_1–C_6), piperidine, pyrazine, alkanolamine (C_2–C_6) and cycloalkylamine (C_3–C_6); R and R', when they are the same, are selected from the group consisting of



wherein A is as hereinabove defined; and R and R', when they are different, are each selected from the group consisting of —OSO_3A and



4,359,459

O-α-D-MULTIGALACTOPYRANOSYL-O-α-D-MULTIGLUCOPYRANOSYL-O-β-D-MULTIFRUCTOFURANOSYL-GLUCOPYRANOSIDE SULFATE SALTS

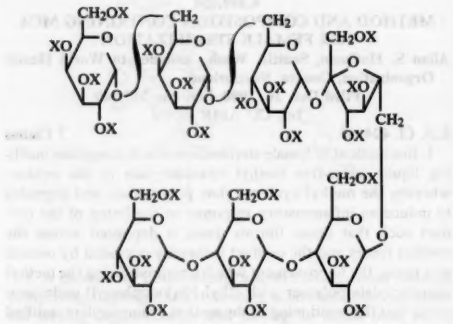
Vijay G. Nair, Piermont, and Seymour Bernstein, New City, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Sep. 28, 1981, Ser. No. 305,886

Int. Cl.³ A61K *71/30*; C07H *5/08*

U.S. Cl. 424—180 **12 Claims**

4. A method of inhibiting the complement system in a body fluid which comprises subjecting said body fluid to the action of an effective complement inhibiting amount of a compound selected from those of the formula:



wherein X is —SO_3A; and A is a pharmaceutically acceptable cation salt, wherein the salt forming moiety is selected from the group consisting of alkali metal, alkaline earth metal, ammonia and substituted ammonia selected from the group consisting of trialkylamine (C_1–C_6), piperidine, pyrazine, alkanolamine (C_2–C_6) and cycloalkylamine (C_4–C_8).

4,359,460

6'-(1-ADAMANTANECARBOXYLATE)-6-O-α-D-GALACTOPYRANOSYL-α-D-GLUCOPYRANOSE SULFATE SALTS

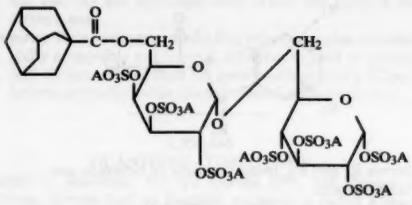
Vijay G. Nair, Piermont, and Seymour Bernstein, New City, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Oct. 13, 1981, Ser. No. 310,672

Int. Cl.³ A61K *31/715, 31/73*; C07H *5/08*

U.S. Cl. 424—180 **13 Claims**

5. A method of inhibiting the complement system in a warm-blooded animal which comprises administering to said warm-blooded animal an effective complement inhibiting amount of a compound selected from those of the formula:



wherein A is a pharmaceutically acceptable cation salt, wherein the salt forming moiety is selected from the group consisting of alkali metal, alkaline earth metal, ammonia and substituted ammonia selected from the group consisting of trialkylamine (C_1–C_6), piperidine, pyrazine, alkanolamine (C_2–C_6) and cycloalkylamine (C_3–C_6).

4,359,461

MONO-, DI- AND TRI-ADAMANTYLCARBONYL-DIGALACTOPYRANOSYL- GLUCOPYRANOSYL-FRUCTOFURANOSE SULFATE SALTS

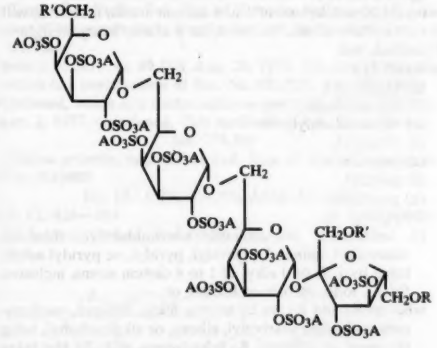
Vijay G. Nair, Piermont, and Seymour Bernstein, New City, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Oct. 28, 1981, Ser. No. 315,789

Int. Cl.³ A61K *31/715, 31/73;* **C07H** *5/08*

U.S. Cl. 424—180 **21 Claims**

1. A compound selected from those of the formula:



wherein R is 1-adamantylcarbonyl; R′ is selected from the group consisting of —SO_3A and 1-adamantylcarbonyl; and A is a pharmaceutically acceptable salt cation, wherein the salt forming moiety is selected from the group consisting of alkali metal, alkaline earth metal, ammonia and substituted ammonia selected from the group consisting of trialkylamine (C_1–C_6), piperidine, pyrazine, alkanolamine (C_2–C_6) and cycloalkylamine (C_3–C_6).

9. A method of inhibiting the complement system in a warm-blooded animal which comprises administering to said warm-blooded animal an effective complement inhibiting amount of a compound of claim 1.

4,359,462

ANTIBIOTIC 67-121, A NEW POLYENE ANTIFUNGAL ANTIBIOTIC PRODUCED BY *ACTINOPLANES CAERULEUS*

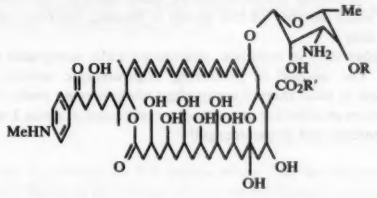
Marvin J. Weinstein; Gerald H. Wagman, both of East Brunswick; Joseph A. Marquez, Montclair, and Mahesh G. Patel, Verona, all of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Division of Ser. No. 946,934, Sep. 28, 1978, Pat. No. 4,223,130, Continuation-in-part of Ser. No. 780,207, Mar. 22, 1977, abandoned. This application May 14, 1980, Ser. No. 149,617

Int. Cl.³ A61K *31/71, 35/00, 31/70*

U.S. Cl. 424—181 **6 Claims**

1. A method of eliciting an antifungal response which comprises administering to an animal having a susceptible fungal infection an antifungal effective dose of the Antibiotic 67-121 Complex, a component thereof, a C_1–C_4 alkyl ester thereof having the formula



wherein R is hydrogen or 1-O-B-D-mannosyl, R^1 is hydrogen or C_1–C_4 lower alkyl, and the non-toxic pharmaceutically acceptable acid addition salts thereof.

4,359,463

STABILIZATION OF FACTOR VIII ACTIVITY IN WHOLE BLOOD OR BLOOD PLASMA

Gail A. Rock, 270 Sandridge Rd., Rockcliffe Park, Canada (K1L 5A2)

Filed Nov. 26, 1980, Ser. No. 210,383

Int. Cl.³ A61K *35/14*

U.S. Cl. 424—101 **12 Claims**

1. A method for maintaining Factor VIII activity in blood or blood plasma comprising:

collecting freshly obtained whole blood or blood plasma prepared from that blood or freshly obtained blood plasma prepared by plasmapheresis into a calcium chelating anticoagulant; and then

mixing the collected product with a calcium-heparin solution, said calcium being added in sufficient quantity to restore calcium in said blood or blood plasma to substantially normal physiological levels.

4,359,464

3-FURYLMETHYL-6-HALO-7,8-DIHYDROXY-1-PHENYL-2,3,4,5-TETRAHYDRO-1H-3-BENZAZEPINES AND ANTIHYPERTENSIVE USE THEREOF

Joseph Weinstock, Phoenixville, Pa., assignor to SmithKline Beckman Corporation, Philadelphia, Pa.

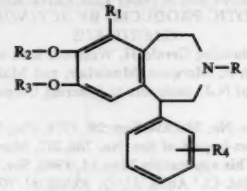
Division of Ser. No. 158,833, Jun. 12, 1980, which is a division of Ser. No. 893,238, Apr. 4, 1978, Pat. No. 4,255,422, which is a continuation-in-part of Ser. No. 742,965, Nov. 17, 1976, Pat. No. 4,160,765. This application Aug. 4, 1981, Ser. No. 289,949

Claims priority, application South Africa, Oct. 4, 1977, 77/5910

Int. Cl.³ C07D *405/06;* **A61K** *31/55*

U.S. Cl. 424—285 **7 Claims**

1. A compound of the formula:



in which:

R is furylmethyl;

R_1 is halo or trifluoromethyl;

R_2 and R_3 are hydrogen or lower alkanoyl of from 2–7 carbons; and

R_4 is hydrogen or from 1–3 substituents from the group comprising trifluoromethyl, halo, methyl, methoxy or, when another of this group is present, hydroxy or acetoxy;

together with its nontoxic, pharmaceutically acceptable salts.

5. The method of producing dopaminergic activity is a subject in need thereof comprising administering orally or by injection an effective quantity of a compound of claim 1 which is nontoxic and dopaminergic.

4,359,465

METHODS FOR TREATING GASTROINTESTINAL INFLAMMATION

Mary J. Ruwart, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

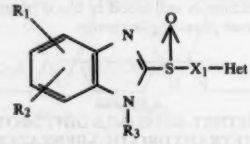
Filed Jul. 28, 1980, Ser. No. 173,233

Int. Cl.³ A61K *31/44*

U.S. Cl. 424—263 **5 Claims**

1. A method of protecting the gastrointestinal tract in a mammal from the untoward, non-gastric-acid-induced effects of exposure to gastrointestinally injurious agents, which comprises:

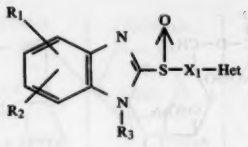
administering orally to said mammal a non-antisecretory (less than antisecretory ED_{50}) amount of a cytoprotective heterocyclylalkylsulfinylbenzimidazole of formula (I)



wherein R_1, R_2, R_3, X_1 and Het are as defined in claim 8, or a pharmacologically acceptable salt thereof, effective to prevent or ameliorate said effects.

2. A method for the treatment or prevention of a non-gastric-acid induced, non-traumatically-induced, non-neoplastic gastrointestinal inflammatory disease in a mammal suffering from or particularly susceptible to the development of said disease, which comprises:

administering orally to said mammal an amount of a cytoprotective heterocyclylalkylsulfinylbenzimidazole of formula (I)



(I)

wherein R_1 and R_2, being the same or different, are

(a) hydrogen,

(b) alkyl of 1 to 4 carbon atoms, inclusive,

(c) fluoro, iodo, chloro, or bromo,

(d) cyano,

(e) carboxy,

(f) carboxyalkyl of 2 to 5 carbon atoms, inclusive,

(g) alkyloxycarbonyl of 2 to 5 carbon atoms, inclusive,

(h) alkoxycarbonylalkyl of 3 to 9 carbon atoms, inclusive, with

the proviso that each alkyl group therein is of 1 to 4 carbon atoms, inclusive,

(i) carbamoyl,

(j) carbamoyloxy,

(k) hydroxy,

(l) alkoxy of 1 to 5 carbon atoms, inclusive,

(m) hydroxyalkyl of 1 to 7 carbon atoms, inclusive,

(n) trifluoromethyl, or

(o) alkylcarbonyl of 1 to 4 carbon atoms, inclusive,

wherein R_3 is

(a) hydrogen,

(b) alkyl of 1 to 4 carbon atoms, inclusive,

(c) alkylcarbonyl of 1 to 4 carbon atoms, inclusive,

(d) alkoxycarbonyl of 2 to 5 carbon atoms, inclusive,

(e) carbamoyl,

(f) alkylcarbamoyl of 2 to 5 carbon atoms,

(g) dialkylcarbamoyl of 3 to 9 carbon atoms, inclusive, with the proviso that each alkyl is of 1 to 4 carbon atoms, inclusive,

(h) alkylcarbonylmethyl of 3 to 5 carbon atoms, inclusive,

(i) alkoxycarboylmethyl of 3 to 5 carbon atoms, inclusive, or

(j) alkylsulfonyl of 1 to 4 carbon atoms, inclusive,

wherein X_1 is alkylene of 1 to 4 carbon atoms, inclusive, with 1 to 4 carbon atoms, inclusive, in a chain, being straight or branched, and

wherein Het is

(a) imidazolyl,

(b) imidazolinyl,

(c) benzimidazolyl,

(d) thiazolyl,

(e) thiazolinyl,

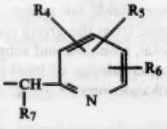
(f) quinolyl,

(g) piperidyl,

(h) pyridyl, or

(i) imidazolyl, imidazolinyl, benzimidazolyl, thiazolyl, thiazolinyl, quinolyl, piperidyl, pyridyl, or pyridyl substituted by 1, 2, or 3 alkyl of 1 to 4 carbon atoms, inclusive, fluoro, iodo, chloro, or bromo; or

wherein R_1 and R_2 are hydrogen, alkyl, halogen, methoxycarbonyl, ethoxycarbonyl, alkoxy, or alkylcarbonyl, being the same or different, R_3 is hydrogen, and $-X_1$-Het taken together is a moiety of formula (II)



(II)

wherein R_4, R_5, and R_6, being the same or different, are (a) hydrogen, (b) methyl, (c) methoxy, (d) ethoxy, (e) methoxyethoxy, or (f) ethoxyethoxy, with the provisos that

(1) R_3, R_4, and R_5 are not all hydrogen, and (2) two of R_3, R_4, and R_5 are hydrogen only when the third is not methyl, and

wherein R_7 is hydrogen, methyl, or ethyl; or a pharmacologically acceptable salt thereof, effective to treat or prevent said disease and less than the gastric antisecretory ED_{50} of heterocyclylalkylsulfinylbenzimidazole or salt thereof.

4,359,466

GUANIDINE COMPOUNDS

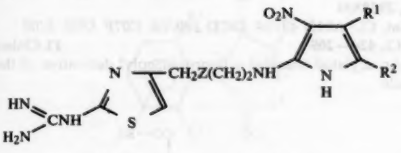
Michael L. Roantree, Welwyn Garden City, and Rodney C. Young, Bengeo, both of England, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

Filed Oct. 14, 1980, Ser. No. 196,502

Int. Cl.³ C07D *277/20;* **A61K** *31/425*

U.S. Cl. 424—263 **12 Claims**

1. A compound of formula



I

or pharmaceutically acceptable acid addition salt thereof, where Z is sulphur or methylene and R^1 is hydrogen; C_{1-4} alkyl; optionally substituted phenyl or phenyl (C_{1-4} alkyl), (the substituents being one or more C_{1-4} alkyl or C_{1-4} alkoxy groups or halogen atoms or a methylenedioxy group); or optionally substituted furanyl- or thienyl- or pyridyl-(C_{1-4} alkyl) (the substituents being one or more C_{1-4} alkyl or C_{1-4} alkoxy groups); and R^2 is hydrogen; C_{1-4} alkyl or benzyl.

4,359,467

PROSTANOIC ACID DERIVATIVES AND THEIR PREPARATION

Helmut Vorbrüggen; Norbert Schwarz; Olaf Loge, and Walter Elger, all of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Bergkamen and Berlin, Fed. Rep. of Germany

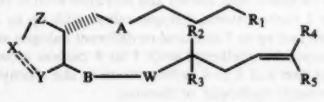
Division of Ser. No. 69,193, Aug. 24, 1979, Pat. No. 4,284,646, which is a continuation of Ser. No. 932,823, Aug. 10, 1978, abandoned, which is a continuation-in-part of Ser. No. 821,130, Aug. 2, 1977, abandoned. This application Apr. 22, 1981, Ser. No. 256,369

Claims priority, application Fed. Rep. of Germany, Aug. 6, 1976, 2635985

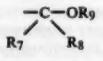
Int. Cl.³ C07C *177/00;* **A61K** *31/557*

U.S. Cl. 424—263 **21 Claims**

1. A compound of the formula

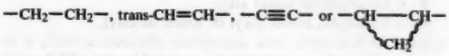


wherein R_1 is



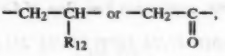
or —NHR_{10} wherein R_{10} is C_{1-10} alkyl, phenyl, 1-naphthyl, or 2-naphthyl, or R_{10} is phenyl-, 1-naphthyl- or 2-naphthyl-substituted by 1–3 halolgen atoms, one phenyl group, one to three alkyl groups each of 1–4 carbon atoms, or a chlormethyl, fluoromethyl, trifluoromethyl or alkoxy group, or R_{10} is thienyl, furyl, pyridyl, or the acyl radical of an organic carboxylic or sulfonic acid of 1–15 carbon atoms; and wherein R_7 and R_8 each are hydrogen atoms or alkyl of 1–4 carbon atoms and R_9 is the acyl radical of an organic carboxylic or sulfonic acid of 1–15 carbon atoms or of an inorganic acid or is

R_{10} having the definitions given above; A is —CH_2—CH_2— or cis- or trans—CH=CH—; B is

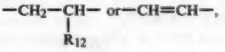


wherein the methylene group can be in the α- or β-position; W is free or functionally modified hydroxymethylene, a free of functionally modified carbonyl, or

wherein R_{11} is alkyl of 1–5 carbon atoms and the OH-group can be in the α- or β-position and can be functionally modified; Z is carbonyl or hydroxymethylene, either of which can be free or functionally modified; X=Y is either



when Z is a free or functionally modified hydroxymethylene group, or is either



when Z is a free or functionally modified carbonyl group, wherein R_{12} is a hydrogen atom, methyl, a cyanide group (—CN), or a free or functionally modified hydroxy; R_2 is a hydrogen atom or C_{1-5}-alkyl; R_3 is a hydrogen atom or C_{1-5}-alkyl; R_4 and R_5 are each methyl or one of R_4 and R_5 is a chlorine atom and the other is methyl; and, when R_6 is hydroxy, the physiologically acceptable salts thereof with bases; wherein "functionally modified" OH refers to OH etherified by tetrahydropyranyl, tetrahydrofuranyl, α-ethoxyethyl, trimethylsilyl, dimethyltert-butylsilyl or tri-p-benzylsilyl or esterified by the acyl group of a C_{1-15} organic carboxylic or sulfonic acid; and "functionally modified" carbonyl refers to carbonyl converted to a cyclic ketal with ethylene glycol, 1,3-propanediol, 2,2-dimethyl-1,3-propanediol, 1,2-cyclopentanediol, or glycerol.

4,359,468

ANTIALLERGIC N-[4-(INDOLYL)-PIPERIDINO-ALKYL]-BENZIMIDAZOLONES

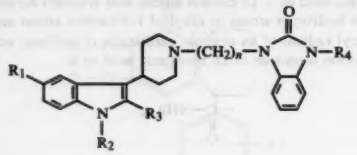
Kurt Freter, Ridgefield; Victor Fuchs, New Fairfield, and James T. Oliver, Middlebury, all of Conn., assignors to Boehringer Ingelheim Ltd., Ridgefield, Conn.

Filed Feb. 25, 1981, Ser. No. 237,966

Int. Cl.³ A61K *31/445;* **C07D** *401/14*

U.S. Cl. 424—267 **5 Claims**

1. A compound of the formula



wherein

R_1 is hydrogen, halogen or methoxy;

R_2 is hydrogen or lower alkyl;

R_3 is hydrogen or lower alkyl;

R_4 is hydrogen, lower alkyl or lower alkenyl;

n is 2 to 6;

or a non-toxic, pharmacologically acceptable acid addition salt thereof.

5. The method of suppressing allergic reactions in a warm-blooded animal in need thereof, which comprises perorally, parenterally, topically or by inhalation administering to said animal an effective antiallergic amount of a compound of claim 1.

4,359,469

COMBATING PESTS WITH N-SULPHENYLATED OXIME-CARBAMATES

Jörg Stetter, Wuppertal; Bernhard Homeyer, Leverkusen, and Ingeborg Hammann, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

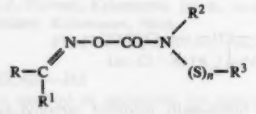
Filed Jul. 25, 1977, Ser. No. 819,021

Claims priority, application Fed. Rep. of Germany, Aug. 10, 1976, 2635883

Int. Cl.³ A01N *47/24;* **C07D** *233/61, 231/12, 249/08*

U.S. Cl. 424—269 **9 Claims**

1. An N-sulphenylated oxime-carbamate of the formula



in which

R is alkyl with 1 to 6 carbon atoms, phenyl, phenyl substituted by halogen, phenyl-C_{1-4}-alkyl-, halophenyl-C_{1-4}-alkyl-, or cycloalkyl, methylcycloalkyl or ethyl-cycloalkyl with 5 to 7 ring carbon atoms;

R^1 is (a) a pyrazol-1-yl, imidazol-1-yl, 1,2,4-triazol-1-yl, 1,2,3-triazol-1-yl, 1,3,4-triazol-1-yl, 1,2,5-triazol-1-yl, indazol-1-yl, benzimidazol-1-yl, or benztriazol-1-yl radical optionally carrying at least one halogen, alkyl with 1 to 4 carbon atoms, halogenoalkyl with up to 2 carbon atoms and up to 5 halogen atoms, alkoxy or alkylthio each with up to 4 carbon atoms, or nitro substituent; or (b) alkyl with 1–4 carbon atoms or cycloalkyl with 5–6 carbon atoms, either of which is substituted by (a);

R^2 is alkyl with 1 to 4 carbon atoms;

R^3 is alkyl with 1 to 4 carbon atoms, halogenoalkyl with 1 or 2 carbon atoms and up to 5 halogen atoms, phenyl, phenyl substituted by halogen, alkyl with 1 or 2 carbon atoms or halogenoalkyl with 1 or 2 carbon atoms and up to 5 halogen atoms, alkoxycarbonyl with 1 to 4 carbon atoms in the alkoxy part, a radical identical to that to which the $-(S)_nR^3$ group is bonded, or $-NR^5-SO_2-R^4$,

R^4 is alkyl with 1 to 4 carbon atoms, dialkylamino with 1 to 4 carbon atoms in each alkyl part, phenyl, or phenyl substituted by halogen, alkyl with 1 or 2 carbon atoms, halogen-alkyl with 1 or 2 carbon atoms and up to 5 halogen atoms, cyano or nitro,

R^5 is alkyl with 1 to 4 carbon atoms, and

n is 1 or 2,

or a salt thereof with a physiologically tolerated acid.

8. A method of combating arthropods or nematodes, which comprises applying to the arthropods or nematodes, or to a habitat thereof, an arthropodicidally or nematicidally effective amount of a compound or salt thereof according to claim 1.

4,359,470

ACYLATED TRIAZOLYL-γ-FLUOROPINACOLYL DERIVATIVES AND THEIR USE AS FUNGICIDES

Wolfgang Krämer, Wuppertal; Karl Büchel, Burscheid; Jörg Stetter, Wuppertal; Paul-Ernst Frohberger, Leverkusen, and Wilhelm Brandes, Leichlingen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

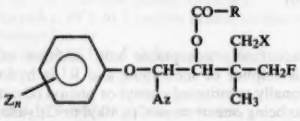
Filed Sep. 17, 1980, Ser. No. 187,866

Claims priority, application Fed. Rep. of Germany, Sep. 24, 1979, 2938534

Int. Cl.³ A01N *43/64;* **C07D** *249/08;* **C07F** *1/08, 3/06*

U.S. Cl. 424—269 **11 Claims**

1. An acylated triazolyl-γ-fluoropinacolyl derivative of the formula



in which

Az represents 1,2,4-triazol-1-yl or 1,2,4-triazol-4-yl,

R represents straight-chain or branched alkyl with 1 to 8 carbon atoms, straight-chain or branched alkenyl or alkynyl with in either case 2 to 4 carbon atoms, halogenoalkyl with 1 or 2 carbon atoms and 1 to 5 halogen atoms, alkoxy with 1 to 4 carbon atoms, alkoxyalkyl with 1 to 4 carbon atoms in each alkyl part, cycloalkyl with 5 to 7 carbon atoms, optionally substituted phenyl or phenylalkyl or phenoxyalkyl, either of which is optionally substituted in the phenyl part and has up to 2 carbon atoms in the alkyl part, the substituents on the phenyl part in the last three cases being selected from halogen, cyano, nitro and alkyl or alkoxy with in either case 1 to 2 carbon atoms, or R represents alkylamino with 1 to 12 carbon atoms, dialkylamino with 1 to 4 carbon atoms in each alkyl part, halogenoalkylamino with up to 4 carbon atoms and up to 5 identical or different halogen atoms, or alkoxycarbonylamino with 1 to 4 carbon atoms in the alkyl part, alkoxyalkylamino with 1 to 4 carbon atoms in each alkyl part or optionally monosubstituted or polysubstituted phenylamino, the substituents being selected from halogen, nitro, cyano, straight-chain or branched alkyl with 1 to 4 carbon atoms, alkoxy and alkylthio with in either case 1 or 2 carbon atoms, halogenoalkyl with up to 2 carbon atoms and up to 5 identical or different halogen atoms and alkoxycarbonylalkenyl with 1 to 4 carbon atoms in the alkyl part and 2 to 4 carbon atoms in the alkenyl part,

X represents hydrogen or fluorine,

Z represents halogen, and

n represents 1 or 2, or a physiologically acceptable acid addition salt thereof with a hydrogen halide acid, phosphoric acid, nitric acid, sulphuric acid, a sulphonic acid or an optionally hydroxy-substituted mono- or dicarboxylic acid, or a complex thereof with a metal salt, the metal of which is copper, zinc, manganese, magnesium, tin, iron or nickel and the anion of which is halide, nitrate, sulphate or phosphate.

9. A fungicidal composition comprising as active ingredient a fungicidally effective amount of a compound, salt or complex according to claim 1 in admixture with a diluent.

4,359,471
2-(N-ARYL,N-1,2,3-THIADIAZOLYLCARBONYL)-AMINOBUTYRO-LACTONES, THEIR PREPARATION, FUNGICIDAL AGENTS CONTAINING THESE COMPOUNDS, AND THEIR USE AS FUNGICIDES

Eberhard Ammermann; Bernd Zeeh, both of Ludwigshafen; Gerhard Hamprecht, Weinheim, and Ernst-Heinrich Pommer, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

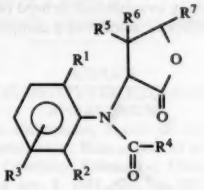
Filed Oct. 16, 1981, Ser. No. 312,314

Claims priority, application Fed. Rep. of Germany, Nov. 8, 1980, 3042195

Int. Cl.³ C07D *417/12;* A01N *43/82*

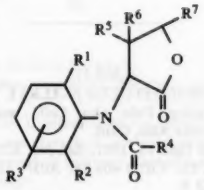
U.S. Cl. 424—269 **3 Claims**

1. A 2-(N-aryl,N-1,2,3-thiadiazolylcarbonyl)-aminobutyrolactone of the formula



where R^1 is C_1–C_3-alkyl, R^2 is hydrogen, C_1–C_3-alkyl or halogen, R^3 is hydrogen, C_1–C_3-alkyl or halogen, R^4 is unsubstituted or halogen-substituted 1,2,3-thiadiazol-4-yl or -5-yl and R^5, R^6 and R^7, independently of one another, are hydrogen or methyl.

2. A process for combating fungi, wherein the fungi or the objects to be protected against fungus attack are treated with a 2-(N-aryl,N-1,2,3-thiadiazolylcarbonyl)-aminobutyrolactone of the formula



where R^1 is C_1–C_3-alkyl, R^2 is hydrogen, C_1–C_3-alkyl or halogen, R^3 is hydrogen, C_1–C_3-alkyl or halogen, R^4 is unsubstituted or halogen-substituted 1,2,3-thiadiazol-4-yl or -5-yl and R^5, R^6 and R^7, independently of one another, are hydrogen or methyl.

4,359,472
BIS-HYDROXYMETHYL CARBONATE BRIDGED ANTIBACTERIAL AGENTS

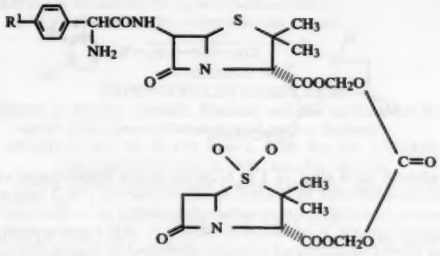
Ernest S. Hamanaka, Groton, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed Dec. 22, 1981, Ser. No. 334,017

Int. Cl.³ A61K *31/43;* C07D *499/32*

U.S. Cl. 424—271 **19 Claims**

1. A compound of the formula:



or a pharmaceutically acceptable acid addition salt thereof wherein:

R^1 is hydrogen, hydroxy, formyloxy, alkanoyloxy having from two to seven carbon atoms, alkoxycarbonyloxy having from two to seven carbon atoms or $R^2C_6H_4COO$ where R^2 is hydrogen, alkyl having from one to four carbon atoms, alkoxy having from one to four carbon atoms, F, Cl, Br, I or CN.

5. A method of treating a bacterial infection in a mammalian subject, which comprises administering thereto an antibacterially effective amount of a compound according to claim 1.

4,359,473
α-AMINO DEOXY CLAVULANIC ACID ANTIBACTERIAL AGENTS

Irene Stirling, Reigate, and Brian P. Clarke, Kingswood, both of England, assignors to Beecham Group Limited, England

Continuation-in-part of Ser. No. 56,071, Jul. 9, 1979, which is a continuation-in-part of Ser. No. 896,441, Apr. 14, 1978, abandoned. This application Sep. 4, 1979, Ser. No. 72,234

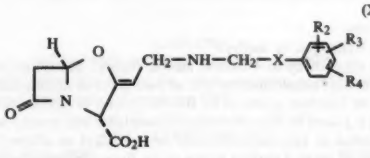
Claims priority, application United Kingdom, Apr. 22, 1977, 1674/77; Sep. 6, 1977, 37072/77; Dec. 2, 1977, 50229/77; Dec. 23, 1977, 53866/77; Jul. 29, 1978, 31624/78; Sep. 9, 1978, 36265/78; Sep. 9, 1978, 36270/78

Int. Cl.³ C07D *498/04;* A61K *31/42*

U.S. Cl. 424—272 **69 Claims**

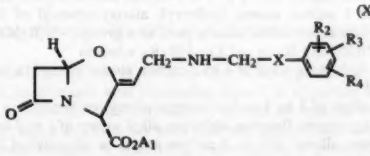
1. A compound of the formula (XVII):

(XVII)



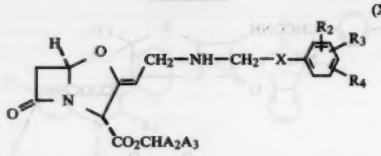
or an ester thereof of the formula (XVIII) or (XIX):

(XVIII)



-continued

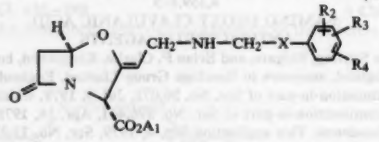
(XIX)



wherein A_1 is alkyl of 1 to 6 carbon atoms unsubstituted or mono-substituted by alkoxyl or alkanoyloxy of 1 to 7 carbon atoms, phthalidyl, ethoxycarbonyloxymethyl or α-ethoxycarbonyloxyethyl, A_2 is alkenyl or alkynyl of up to 5 carbon atoms or phenyl unsubstituted or mono-substituted by fluoro, chloro, bromo, nitro or alkyl or alkoxyl of up to 4 carbon atoms, A_3 is hydrogen, alkyl of up to 4 carbon atoms or phenyl unsubstituted or mono-substituted by fluoro, chloro, bromo, nitro, or alkyl or alkoxyl of up to 4 carbon atoms, R_2 is hydrogen, fluorine, chlorine, bromine, alkyl of 1 to 3 carbon atoms, alkoxy of 1 to 3 carbon atoms, alkanoyloxy of 1 to 3 carbon atoms, hydroxyl, alkoxycarbonyl of 1 to 3 carbon atoms in the alkoxy part, or a group $—N(R_5)CO.R_6$, $—N(R_5)SO_2R_6$ or $—CO—NR_5R_6$ wherein R_5 is hydrogen, alkyl of 1 to 3 carbon atoms, phenyl or benzyl and R_6 is alkyl of 1 to 3 carbon atoms, phenyl or benzyl; R_3 is hydrogen, fluorine, chlorine, alkyl group of 1 to 3 carbon atoms, alkoxy of 1 to 3 carbon atoms or alkanoyloxy of 1 to 3 carbon atoms; R_4 is hydrogen, fluorine, chlorine, alkyl group of 1 to 3 carbon atoms or alkoxyl of 1 to 3 carbon atoms; and X is alkylene of 1 to 4 carbon atoms.

9. A method of treating bacterial infections in mammals including humans which comprises administering to such a mammal in need thereof an antibacterially effective amount of a compound of the formula (XVIII):

(XVIII)



wherein A_1 is tetrahydropyranyl, tetrahydrofuranyl or a moiety of the formula

$$—CHA_5—OA_6 \quad (c)$$

$$—CHA_5—COA_6 \quad (d)$$

$$—CHA_5—CO_2A_6 \quad (e)$$

wherein

A_5 is hydrogen or methyl;

A_6 is alkyl of up to 4 carbon atoms, phenyl, benzyl or phenyl or benzyl substituted by one or two alkyl or alkoxy moieties up to 3 carbon atoms or by fluoro, chloro, bromo or nitro, or A_5 is joined to A_6 to form an ortho-phenylene moiety unsubstituted or substituted by one or two alkyl or alkoxyl moieties of up to 3 carbon atoms or by fluoro, chloro, bromo or nitro,

R_2 is hydrogen, fluorine, chlorine, bromine, alkyl of 1 to 3 carbon atoms, alkoxy of 1 to 3 carbon atoms, alkanoyloxy of 1 to 3 carbon atoms, hydroxyl, alkoxycarbonyl of 1 to 3 carbon atoms in the alkoxy part, or a group $—N(R_5)CO.R_6$, $—N(R_5).SO_2R_6$ or $—CO—NR_5R_6$ wherein

R_5 is hydrogen, alkyl of 1 to 3 carbon atoms, phenyl or benzyl and

R_6 is alkyl of 1 to 3 carbon atoms, phenyl or benzyl;

R_3 is hydrogen, fluorine, chlorine, alkyl group of 1 to 3 carbon atoms, alkoxy of 1 to 3 carbon atoms or alkanoyl of 1 to 3 carbon atoms;

R_4 is hydrogen, fluorine, chlorine, alkyl group of 1 to 3 carbon atoms or alkoxyl of 1 to 3 carbon atoms; and

X is alkylene of 1 to 4 carbon atoms, in combination with a pharmaceutically acceptable carrier.

4,359,474

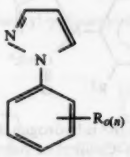
1-PHENYL-PYRAZOLE DERIVATIVES AS GLUCAGON INHIBITORS

Paul L. Anderson, Dover, and Nicholas A. Paolella, Livingston, both of N.J., assignors to Sandoz, Inc., East Hanover, N.J.

Filed Nov. 28, 1980, Ser. No. 211,361
Int. Cl.³ A61K *31/415*
U.S. Cl. 424—273 P **10 Claims**

1. A method of lowering the glucagon level in plasma comprising administering to a mammal in need of such treatment a therapeutically effective amount of a compound of formula I:

(I)



wherein

R_o is methyl, trifluoromethyl or amino, and

n is 1 or 2,

or a pharmaceutically acceptable acid addition salt thereof, with the proviso that when n is 2, R_o is methyl, one methyl group being in the 2-position of the phenyl ring and the other methyl group being in the 3- or 4-position of the phenyl ring.

4,359,475

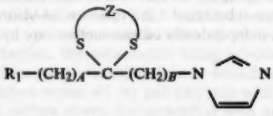
THIOKETAL SUBSTITUTED N-ALKYL IMIDAZOLES

Keith A. M. Walker, Palo Alto, Calif., assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Dec. 21, 1981, Ser. No. 333,010
Int. Cl.³ C07D *409/06*; A01N *43/50*
U.S. Cl. 424—273 R **44 Claims**

1. A compound having the general formula

(I)



wherein

R_1 is phenyl optionally substituted with one or more substituents independently selected from the group consisting of lower alkyl, lower alkoxy, halo, or trifluoromethyl;

Z is ethylene or propylene, optionally substituted with a single substituent which is lower alkyl;

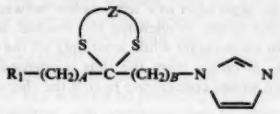
A is the integer 0, 1, 2, or 3;

B is the integer 1, 2, or 3; and

wherein the sum of A and B is 1, 2, 3 or 4; and

the pharmaceutically acceptable acid addition salts thereof.

33. A composition useful for combating and controlling the growth of fungi, bacteria or protozoa which comprises an excipient and an effective amount of at least one compound of the formula



(I)

wherein

R_1 is phenyl optionally substituted with one or more substituents independently selected from the group consisting of lower alkyl, lower alkoxy, halo, or trifluoromethyl;

Z is ethylene or propylene, optionally substituted with a single substituent which is lower alkyl;

A is the integer 0, 1, 2, or 3;

B is the integer 1, 2, or 3; and

wherein the sum of A and B is 1, 2, 3 or 4; and

the pharmaceutically acceptable acid addition salts thereof.

4,359,476

ADJACENTLY SUBSTITUTED CYCLOALKANE-AMIDE ANALGESICS

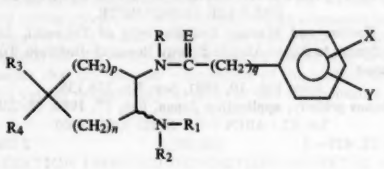
Lester J. Kaplan, Kalamazoo; Moses W. McMillan, Portage, and Jacob Szmuszkovicz, Kalamazoo, all of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Apr. 9, 1981, Ser. No. 252,536

Int. Cl.³ C07D *487/00*; A61K *31/40*

U.S. Cl. 424—274 **20 Claims**

1. A compound of the formula



wherein:

R is hydrogen or C_1 to C_3-alkyl;

R_1 and R_2, taken separately, are each hydrogen or C_1 to C_3-alkyl;

R_1 and R_2, taken together with the nitrogen to which they are bonded, are azetidinyl, pyrrolidinyl or piperidinyl;

R_3, taken separately, is hydroxy, C_1 to C_2-alkyloxy, or C_1 to C_3-alkanoyloxy;

R_4, taken separately, is hydrogen when R_3 is hydroxy, C_1 to C_2-alkyloxy,or C_1 to C_3-alkanoyloxy;

R_3 and R_4, taken together, complete a moiety selected from the group, =G (oxo or thioxo), —G—CH_2CH_2—G—, —G—$CH_2CH_2CH_2$—G—, —G—$CH_2CH(CH_3)CH_2$—G—, —G—$CH_2C(CH_3)_2CH_2$—G—, wherein both G moieties in the same group are oxygen or bivalent sulfur, =N∼OH, and =N∼OC(=O)CH_3, wherein each G is oxygen or bivalent sulfur;

X and Y are independently selected from the group consisting of hydrogen, a halogen having an atomic number from 9 to 35, trifluoromethyl, nitro, methoxy, hydroxy, azido, C_1 to C_3-alkyl, phenyl, methanesulfonyl, cyano, amino, C_1 to C_3-alkoxycarbonyl, C_1 to C_3-alkanoyloxy, C_1 to C_3-carboxacylamino(—NHC(=O)R_6, wherein R_6 is hydrogen or C_1 to C_2-alkyl);

p and n are whole number integers selected from the group zero, 2, 3, or 4 such that one of p and n is zero and the other of p and n is 2, 3, or 4;

q is zero or 1;

E is oxygen or bivalent sulfur;

provided that when R is C_1 to C_3-alkyl, R_1 and R_2 taken together with the nitrogen to which they are bonded complete a pyrrolidinyl ring, p is 3 and n is 0, q is 1, X and Y are chlorine in the 3 and 4 positions, R_3 is not hydroxy, C_1 to C_2-alkoxy or C_1 to C_3-alkanoyloxy;

or a pharmaceutically acceptable salt thereof.

4,359,477

ENTEROCHELIN COMPLEXES

Henry J. Rogers, Clophill, England, assignor to National Research Development Corporation, London, England

Division of Ser. No. 35,415, May 2, 1979, Pat. No. 4,269,850.

This application Feb. 2, 1981, Ser. No. 230,716

Claims priority, application United Kingdom, May 5, 1978, 18003/78

Int. Cl.³ A61K *31/28*; C07F *5/00*

U.S. Cl. 424—287 **10 Claims**

1. An indium or scandium complex of a compound containing at least one serine moiety in its D- or L- configuration and selected from the group consisting of N,N′,N″-tris (2,3-dihydroxybenzoyl)-O-seryl-O-serylserine, N,N′-bis (2,3-dihydroxybenzoyl)-O-serylserine, and derivatives of said compound involving the carboxy and hydroxyl groups of said compound, the derivatives of said carboxy group being pharmaceutically acceptable esters and salts thereof and the derivatives of said hydroxyl group being the resultant double bond from the dehydration of said compound involving said hydroxyl group.

3. An antibacterial pharmaceutical composition, comprising:

an antibacterially effective amount of a complex of a compound containing at least one serine moiety in its D- or L-configuration and selected from the group consisting of N,N′,N″-tris (2,3-dihydroxybenzoyl)-O-seryl-O-serylserine, N,N′-bis(2,3-dihydroxybenzoyl)-O-serylserine and derivatives of said compound involving the carboxy and hydroxyl groups of said compound, the derivatives of said carboxy group being pharmaceutically acceptable esters and salts thereof and the derivative of said hydroxyl group being the resultant double bond from the dehydration of said compound involving said hydroxyl group, with indium or scandium.

5. A method of treating bacterial infections in a human or animal subject, comprising:

administering to said subject an antibacterially effective amount of a complex of a compound containing at least one serine moiety in its D- or L- configuration and selected from the group consisting of N,N′,N″-tris(2,3-dihydroxybenzoyl)-O-seryl-O-serylserine, N,N′-bis (2,3-dihydroxybenzoyl)-O-serylserine and derivatives of said compound involving the carboxy and hydroxyl groups of said compound, the derivatives of said carboxy group being pharmaceutically acceptable esters and salts thereof and the derivative of said hydroxyl group being the resultant double bond from the dehydration of said compound involving said hydroxyl group, with indium or scandium.

4,359,478

HYPOCHOLESTEROLAEMIC AGENTS

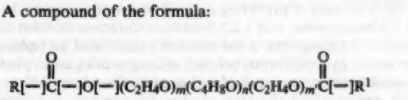
Irving R. Schmolka, Grosse Ile, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Jul. 15, 1981, Ser. No. 283,691

Int. Cl.³ C07C *69/76*

U.S. Cl. 424—308 **10 Claims**

1. A compound of the formula:



wherein R and R^1 are H or the residue of an aliphatic, cycloaliphatic, or aromatic acid containing from 2 to 12 carbon atoms with the proviso that only one of R and R^1 may be H and m+m′ and n are integers such that the approximate average molecular weight of $(C_4H_8O)_n$, representing a polyoxybutylene hydrophobe is between 600 and 4000 and the content of

$(C_2H_4O)_{m+m'}$, representing oxyethylene groups constitute about 5 to about 50 percent by weight of the compound.

4,359,479

CHEWING GUM CONTAINING AN ENERGY-RICH PHOSPHATE COMPOUND

Masatoshi Terasawa, Tokorozawa; Hisashi Ishikawa, Tokyo, and Takuo Uemura, Fujimi, all of Japan, assignors to Lotte & Co., Ltd., Tokyo, Japan

Filed Jan. 21, 1981, Ser. No. 226,740

Claims priority, application Japan, Mar. 11, 1980, 55-29788

Int. Cl.³ A23G *3/30*

U.S. Cl. 426—3 **8 Claims**

1. A chewing gum with high energy, which comprises a chewing gum base and at least one phosphate compound incorporated thereto and selected from the group consisting of adenosine triphosphate (ATP), adenosine diphosphate (ADP), adenosine monophosphate (AMP) and creatine phosphate (CP), in addition to other chewing gum additives including sweeteners, softeners and flavors.

4,359,480

PRODUCTION OF A SOYBEAN MEAL

Manfred Kock, Emmerich, Fed. Rep. of Germany, assignor to Akzo N.V., Arnhem, Netherlands

Continuation-in-part of Ser. No. 132,152, Mar. 20, 1980, abandoned, which is a continuation of Ser. No. 904,435, May 17, 1977, abandoned. This application Aug. 11, 1981, Ser. No. 292,011

Claims priority, application Fed. Rep. of Germany, May 17, 1977, 2722246

Int. Cl.³ A23L *1/20*

U.S. Cl. 426—430 **10 Claims**

1. A method for producing edible soybean meal substantially free from bitter taste which comprises moistening oil-containing pieces of soybeans in the form of crushed and rolled flakes to raise the water content thereof to 12–25% by weight and heat treating the moistened flakes at temperatures in the range of 90 to 120° C. for about 10 to 90 minutes while subjecting the flakes to a mechanical compacting movement sufficient to attain a minimum bulk weight of said flakes of at least about 400 kg/m³, thereafter extracting soybean oil from the heat treated flakes having said minimum bulk weight with a non-polar solvent, separating the soybean flakes after extraction of the oil therefrom from the bulk of the extracting solvent, and drying the separated solvent-wetted soybean flakes by vaporizing the residual solvent therefrom to obtain a soybean meal substantially free from bitter taste.

4,359,481

LIQUID SMOKE CONCENTRATE

Johannes W. Smits, and Franciscus A. Timmermans, both of Oss, Netherlands, assignors to Internationale Octrooi Maatschappij "Octropa" B.V., Rotterdam, Netherlands

Continuation of Ser. No. 973,782, Dec. 27, 1978, abandoned. This application Dec. 17, 1980, Ser. No. 217,320

Claims priority, application United Kingdom, Jan. 3, 1978, 66/78

Int. Cl.³ A23L *1/232*

U.S. Cl. 426—533 **6 Claims**

1. A process of preparing a liquid smoke concentrate, having a 3,4-benzpyrene- and 1,2,5,6-dibenzanthracene-content of less than 0.2 nanograms, a tar content (calculated as polycyclic aromatic hydrocarbons) below 1 microgram/kg and a phenolic compounds content (calculated as phenol) of from 0.90 to 1.60 g/l, and in which the ratio of phenolic compounds content to carbonyl compounds content (calculated as acetone) to titratable acid content (calculated as acetic acid) is 1:(17.0–47.0):(13–.0–40.0) which consists essentially of liberating the smoke obtained in the destructive distillation at 350°–450° C. of cellulosic and/or lignin material from fly ash particles, then removing a first heavy tar fraction by cooling the smoke to a temperature between 150° C. and 200° C., subsequently removing a second tar fraction by further cooling the smoke remaining after the first tar separation to a temperature between 80° C. and 120° C., and finally condensing the residual smoke by cooling to room temperature while separating off the non-condensable gases, to obtain from the thus condensed residual smoke the liquid smoke concentrate having the characteristics indicated.

4,359,482

FLUID SHORTENING COMPOSITION HAVING ANTI-GUMMING PROPERTIES

Thomas G. Crosby, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 841,405, Oct. 12, 1977, abandoned. This application Oct. 3, 1978, Ser. No. 948,136

Int. Cl.³ A23D *5/00*; A23L *1/01*

U.S. Cl. 426—606 **16 Claims**

1. A fluid shortening composition comprising an edible fluid triglyceride base fat having acyl groups of from 16 to 22 carbon atoms and containing from about 1% to about 11% by weight of added triglyceride hardstock; an amount of a triglyceride having acyl groups of from 8 to 14 carbon atoms in the range of from about 0.05% to about 5% by weight of the composition and effective to reduce the gumming tendencies of the base fat; and from about 0.1% to about 0.5% of lecithin by weight of the composition.

4,359,483

PROCESS FOR PRODUCING A MULTI-LAYERED SLOW RELEASE COMPOSITE

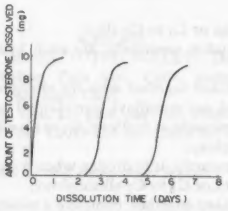
Isao Kaetsu, and Masaru Yoshida, both of Takasaki, Japan, assignors to Japan Atomic Energy Research Institute, Tokyo, Japan

Filed Feb. 10, 1981, Ser. No. 233,135

Claims priority, application Japan, Feb. 27, 1980, 55/23878

Int. Cl.³ A01N *1/02*; B05D *3/00, 3/06*

U.S. Cl. 427—2 **2 Claims**



1. A process for producing a multilayered slow release composite comprising:

a first step wherein one or more physiologically active substances is mixed with one member selected from the group consisting of one or more supercooling polymerizable vinyl monomers, and a mixture thereof with one or more natural or synthetic polymeric substances, and the resultant mixture is given a predetermined shape and subjected to irradiation with light or ionizing radiation at −20° to −130° C. to form a slow release composite;

a second step wherein a predetermined thickness of coating of one member selected from the group consisting of one or more supercooling polymerizable vinyl monomers, one or more natural or synthetic polymeric substances and a mixture thereof is formed on the surface of said slow release composite, which then is subjected to a physical treatment so that a layer wherein no physiologically active substance is encapsulated is formed on the surface of said slow release composite;

a third step wherein a predetermined thickness of coating of

a mixture of one or more physiologically active substances with one member selected from the group consisting of one or more supercooling polymerizable vinyl monomers, and a mixture thereof with one or more natural or synthetic polymeric substances is formed on the surface of the slow release composite having the layer provided in the second step wherein no physiologically active substance is encapsulated, said composite then is subjected to irradiation with light or ionizing radiation at −20° to −130° C. to form a layer wherein the physiologically active substance is encapsulated;

said second and third steps being optionally repeated as many times as desired so that layers wherein the physiologically active substance is encapsulated alternate with layers wherein no physiologically active substance is encapsulated.

4,359,484

PROCESS FOR REDUCING TRACES OF ABRASION OR SCRATCHES ON THE SURFACE OF A RECORD CARRIER

Dietrich J. Bahr, Herrenberg, and Marian Briska, Böblingen, both of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 25, 1981, Ser. No. 238,289

Claims priority, application Fed. Rep. of Germany, Mar. 26, 1980, 3011591

Int. Cl.³ C10M *5/16, 5/14, 7/20, 7/22*

U.S. Cl. 427—14.1 **8 Claims**

1. A process for reducing traces of abrasion during printing operations in an electrographic printer, on the surface of a record carrier covered with a thin evaporated aluminum layer, said process being characterized in that a thin layer of about 2 nm to 1000 nm of a metallic soap is applied to said layer in such a manner that the inherent unevenness of the surface of the record carrier is essentially leveled out and compensated.

4,359,485

RADIATION INDUCED DEPOSITION OF METAL ON SEMICONDUCTOR SURFACES

Vincent M. Donnelly, Berkeley Heights, and Robert F. Karlicek, Jr., Kenilworth, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 1, 1981, Ser. No. 259,428

Int. Cl.³ B05D *1/18, 3/06*

U.S. Cl. 427—53.1 **14 Claims**

1. A method of forming a metal layer on a surface of a Group III-V compound semiconductor body comprising the steps of

(a) placing the surface in contact with a metal-containing solution; and

(b) directing optical radiation through the solution to the surface, the radiation having a wavelength which is absorbed in the surface and a power density sufficient to thermally decompose said surface, thereby to thermally induce a chemical reaction between the solution and the surface and to cause metal from the solution to be deposited on the surface.

4,359,486

METHOD OF PRODUCING ALLOYED METAL CONTACT LAYERS ON CRYSTAL-ORIENTATED SEMICONDUCTOR SURFACES BY ENERGY PULSE IRRADIATION

Hubert Patalong, Munich, and Eberhard F. Krimmel, Pullach, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 4, 1981, Ser. No. 289,880

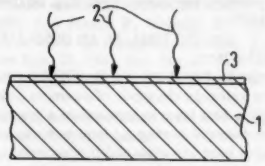
Claims priority, application Fed. Rep. of Germany, Aug. 28, 1980, 3032461; Dec. 4, 1980, 3045784

Int. Cl.³ H01L *21/24*

U.S. Cl. 427—53.1 **15 Claims**

1. In a method of producing alloyed metal contact layers on crystal-orientated semiconductor surfaces by means of pulsed energy irradiation, the improvement comprising wherein:

prior to application of a metal contact layer, an area of a semiconductor surface intended for the metal contact is scanned with a dense sequence of relatively intense laser-light pulses,



a metal layer is applied onto such scanned semiconductor surface area; and

said metal layer is alloyed into said semiconductor surface area.

4,359,487

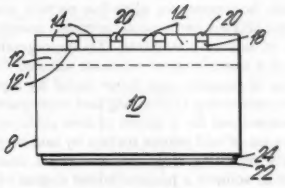
METHOD FOR APPLYING AN ANTI-REFLECTION COATING TO A SOLAR CELL

Michael Schneider, Summit, N.J., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 167,417, Jul. 11, 1980, abandoned. This application Oct. 9, 1981, Ser. No. 310,330

Int. Cl.³ H01L *31/00;* **B05D** *1/18, 1/38*

U.S. Cl. 427—75 **16 Claims**



1. A method for applying an anti-reflective coating and an electrode pattern to a solar cell surface, said method comprising:

coating at least said surface with an anti-reflection layer;

masking a portion of said coated surface to form an electrode pattern in at least a portion of said surface which remains unmasked;

etching said coating in the unmasked portion of said surface to remove said anti-reflection layer;

sensitizing at least said etched region of said solar cell surface;

electrolessly plating a layer comprising nickel onto at least said sensitized region of said solar cell surface;

removing said masking from said solar cell surface whereby said nickel layer remains only in said electrode pattern;

coating said nickel layer with a layer of electrically conducting material.

4,359,488

METHOD OF PRODUCING A DOUBLE LAYER HAVING A HETERO-JUNCTION FOR A STORAGE ELECTRODE OF A CAMERA DEVICE

Bernd Heimann, Wiesbaden, Fed. Rep. of Germany, assignor to Heimann GmbH, Wiesbaden, Fed. Rep. of Germany

Filed Dec. 3, 1980, Ser. No. 212,367

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1979, 2951482

Int. Cl.³ H01L *31/18;* B05D *1/38*

U.S. Cl. 427—76 12 Claims

1. A method of producing a double layer having a hetero-junction for a storage electrode of a camera device comprising:

providing a first layer composed of a transparent semiconductor material having n^+-conductivity on a substrate;

admixing at least one glass additive material consisting essentially of boron oxide with a cadmium material selected from the group consisting of cadmium selenide and cadmium sulfo-selenide and sintering the resultant admixture in a vacuum under a thermal treatment at a temperature ranging between about 750° C. to 850° C. so as to prevent substantially any metallic cadmium generated during said thermal treatment from precipitating onto a free surface of said first layer; and

initiating vacuum vapor-deposition of said cadmium material onto said free surface of said first layer at a temperature ranging between about 700° C. and 750° C.

4,359,489

COPRECIPITATION PROCESS FOR THERMIONIC CATHODE TYPE MATERIALS

David M. Corneille, 311 Granger, Dayton, Ohio 45433

Filed Mar. 18, 1981, Ser. No. 244,853

Int. Cl.³ B05D *5/12*

U.S. Cl. 427—77 4 Claims

1. A method for fabricating a thermionic cathode element comprising the steps of (A) dissolving a mixture of alkaline earth metal carbonates consisting essentially of about 2 to 10 weight percent calcium carbonate, 10 to 60 weight percent strontium carbonate, and the balance substantially all barium carbonate in trifluoroethanol to form a solvent mixture; (B) heating said solvent mixture for a period of time and at a temperature sufficient to evaporate said trifluoroethanol and form a uniform, homogeneous, ultra-fine particle sized co-precipitate of said alkaline earth metal carbonate mixture; (C) forming a slurry of said co-precipitate; (D) impregnating the porous surface of a suitable metal substrate selected from the group consisting of tungsten and nickel metal by dipping said substrate into said slurry; (E) heating said impregnated substrate to a temperature and for a period of time sufficient to effect the impregnation of said porous surface by said co-precipitate; (F) alternately repeating steps (D) and (E) a number of cycles sufficient to achieve a predetermined degree of impregnation of said porous substrate with a homogeneous, ultra-finely divided, uniformly sized, particulate mixture of said alkaline earth metal carbonates.

4,359,490

METHOD FOR LPCVD CO-DEPOSITION OF METAL AND SILICON TO FORM METAL SILICIDE

William I. Lehrer, Los Altos, Calif., assignor to Fairchild Camera & Instrument Corp., Mountain View, Calif.

Filed Jul. 13, 1981, Ser. No. 282,768

Int. Cl.³ H01L *21/285*

U.S. Cl. 427—95 11 Claims

1. A process for co-depositing metal and silicon to form metal silicide on a surface such as the surface of a semiconductor integrated circuit wherein said metal is selected from the group consisting of tungsten, molybdenum, tantalum and niobium, comprising:

(a) maintaining a reactor which contains said surface at a temperature of about 500°–650° C.;

(b) purging said reactor by the successive steps of

(i) introducing an inert gas into said reactor,

(ii) introducing a reducing atmosphere into said reactor, and

(iii) introducing hydrogen chloride gas into said reactor;

(c) introducing silane into said reactor such that a base layer of polysilicon is formed on said surface; and

(d) while maintaining silane introduction into said reactor, simultaneously introducing metal chloride vapor into said reactor such that metal and silicon are co-deposited on said polysilicon as metal silicide.

4,359,491

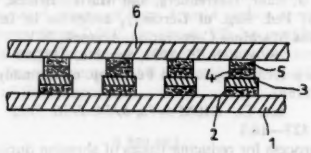
PROCESS FOR THE PREPARATION OF A THERMAL TRANSFERABLE TWINKLING PATTERN

Liu Lai-Chun, Taipei, Taiwan, assignor to Jin An Industrial Co., Ltd., Taipei, Taiwan

Filed Dec. 31, 1980, Ser. No. 221,833

Int. Cl.³ B05D *1/36, 5/06*

U.S. Cl. 427—148 12 Claims



1. A process for the preparation of a thermal transferable twinkling pattern which comprises the steps of printing a transient adhesive layer on a substrate according to any desired pattern, attaching a reflective particulate material on said transient adhesive layer formed as a pattern, positioning a hot-melt adhesive layer thereon leaving the margins of said reflective material layer uncoated with said hot-melt adhesive and subsequently coating a thermosensitive adhesive layer on said hot-melt layer whereby upon transfer said reflective material at the uncoated margins will remain on said transient adhesive layer and will peel therewith along with said substrate providing the transferred reflective layer pattern with a sharp margin.

4,359,492

COATING WITH DUSTING AGENTS IN PELLETIZING TACKY ELASTOMERIC MATERIALS

James A. Schlademan, West Chester, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Mar. 13, 1981, Ser. No. 243,328

Int. Cl.³ C08L *93/00;* B05D *7/00*

U.S. Cl. 427—222 3 Claims

1. A method of preparing free-flowing elastomeric polymer pellets consisting essentially of coating the surface of a strand of normally tacky elastomeric polymer with up to 2% by weight of a dusting agent and then cutting the strands into pellets; said dusting agent consisting of a friable polymer having a ball and ring softening point of at least 95° C. and normally used in compounding of adhesives based on said elastomeric polymer, whereby the dusting agent does not interfere with the normal use of the pellets in adhesive formulations.

4,359,493

METHOD OF VAPOR DEPOSITION

Vern A. Henery, Plum Borough, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 836,177, Sep. 23, 1977, Pat. No. 4,182,783. This application Sep. 12, 1979, Ser. No. 74,581

Int. Cl.³ C23C *11/00, 13/12*

U.S. Cl. 427—255.1 8 Claims

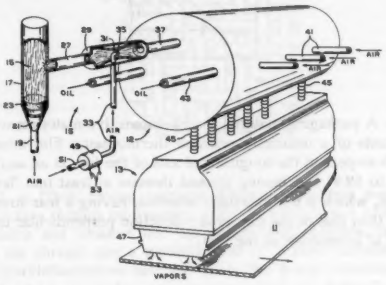
1. In a method of coating a substrate with a film by deposi-

tion from a vaporous reactant composition where a solid phase reactant is vaporized and the resulting vapors are conveyed into contact with the substrate to be coated, the improvement which comprises

fluidizing a mass of particulate solid reactant with a gas at a first temperature substantially below the reaction or decomposition temperature and below the vaporization temperature of the reactant;

drawing a volume of fluidizing gas and suspended particulate solid reactant from the fluidized mass as a particulate reactant-gas composition;

mixing the withdrawn volume of fluidizing gas and suspended particulate reactant with an additional volume of gas which is at a second temperature, also below the reaction or decomposition temperature for the reactant to dilute the particulate reactant-gas composition;



heating the diluted particulate reactant-gas composition to a temperature above the vaporization temperature of the reactant to vaporize the reactant in order to form a vaporous reactant-fluidizing gas composition mixture; and

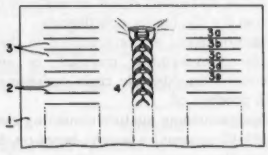
conveying the heated vaporous reactant-fluidizing gas composition mixture into contact with the substrate to be coated while maintaining the substrate at a temperature sufficient to cause the reactant in the composition to react, depositing a film thereon.

4,359,494

FLEXIBLE SHEET MATERIAL WITH RAISED DECORATIVE PATTERN

Kimio Hosaka, Narashino, Japan, assignor to Kabushiki Kaisha Marubishi Sogyo, Tokyo, Japan

Filed Jul. 6, 1981, Ser. No. 281,204
Claims priority, application Japan, Jul. 7, 1980, 55/95283[U]
Int. Cl.³ B32B *3/10, 3/02*
U.S. Cl. 428—15 **13 Claims**



1. An article comprising a flexible sheet of material, having a raised local decorative pattern formed thereon, said decorative pattern including a plurality of substantially parallel through cuts in said material, each of said plurality of through cuts having two spaced apart ends both terminating within said material, said plurality of through cuts forming a plurality of local strips of said material between adjacent ones of said plurality of through cuts along a line extending perpendicularly to said through cuts, each of said plurality of strips being successively passed under and around adjacent ones of said plurality of strips in such a manner that said plurality of strips form a series of interlocking loops.

4,359,495

RETORT-STERILIZABLE POUCH

Carl W. Schroeder, and Joseph R. Webster, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Feb. 25, 1981, Ser. No. 237,830
Int. Cl.³ B32B *1/02, 15/08;* **B65D** *37/00*
U.S. Cl. 428—35 **9 Claims**

1. In a retort-sterilizable laminated structure comprising an aluminum foil or sheet, a heat-sealable polymer layer on one surface of said aluminum foil or sheet, and a heat-resistant resin layer formed on the other surface of said aluminum foil or sheet, the improvement wherein said heat-sealable polymer layer is formed from the composition comprising the cracked product of a blend of a polypropylene copolymer and an ethylene-vinyl acetate copolymer wherein:

(a) the melt flow of said cracked product is between about 15 and about 65 grams per 10 minutes, condition L;

(b) said polypropylene copolymer is a propylene-ethylene copolymer comprising between about 1 and about 10 percent by weight ethylene and has a melt flow of between about 0.5 and about 15 grams per 10 minutes, condition L; and

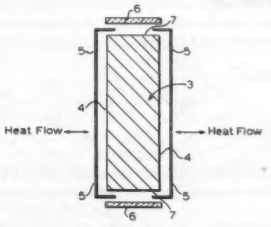
(c) said ethylene-vinyl acetate copolymer has a vinyl acetate content of between about 15 and about 30 percent by weight, and has a melt flow of between about 1 and about 30 grams per 10 minutes, condition E.

4,359,496

HEAT-INSULATING BOARD AND METHOD FOR PRODUCING SAME

Günter Kratel, Durach-Bechen, and Hans Katzer, Kempten, both of Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed Jun. 25, 1981, Ser. No. 277,245
Claims priority, application Fed. Rep. of Germany, Sep. 5, 1980, 3033515
Int. Cl.³ B32B *3/04, 3/06, 5/16*
U.S. Cl. 428—75 **6 Claims**



1. A heat-insulating board comprising:

a board-shaped core of compacted heat-insulating inorganic material of the following composition:

30 to 100% by weight of a finely particulate metal oxide;

0 to 50% by weight of an opacifier; and

0 to 20% by weight of a fibrous material; and

a cover comprising at least two different materials including two non-contacting metal foils, each of which cover an opposite face of said board-shaped core which is to be directed against the heat flow and at least two cover elements made of a heat-insulating material which connects said metal foils together.

4,359,497

PAPER-LIKE BUTENE-1 POLYMER COMPOSITIONS

Jules Magder, and Murray H. Reich, both of Princeton, N.J., assignors to Princeton Chemical Research, Inc., Princeton, N.J.

Continuation of Ser. No. 24,743, Mar. 28, 1979, abandoned, which is a division of Ser. No. 488,135, Jul. 12, 1974, Pat. No. 4,176,148, which is a continuation-in-part of Ser. No. 335,639, Feb. 26, 1973, abandoned, which is a continuation of Ser. No. 175,988, Aug. 30, 1971, abandoned. This application Sep. 18, 1980, Ser. No. 188,404

Int. Cl.³ B32B *3/10, 3/26, 5/00*

U.S. Cl. 428—141 5 Claims

1. A stretched paper-like sheet comprising (a) about 20 to 97% by weight of a butene-1 polymer having a molecular weight in excess of about 20,000, an isotacticity of at least about 25% and a butene-1 content of at least about 50% by weight, and (b) about 3 to 80% by weight of at least one normally solid filler insoluble in said polymer, said sheet having a maximum tensile strength ratio of about 10:1 in mutually perpendicular directions, the surface of said sheet being discontinuous due to the presence of micropores therein.

4,359,498

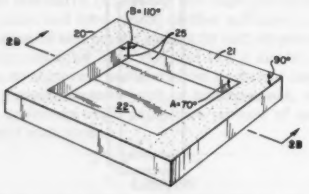
TRANSDUCER STRUCTURE EMPLOYING VERTICALLY WALLED DIAPHRAGMS WITH QUASI RECTANGULAR ACTIVE AREAS

Joseph R. Mallon, Franklin Lakes, and Anthony D. Kurtz, Englewood, both of N.J., assignors to Kulite Semiconductor Products, Inc., N.J.

Filed Apr. 20, 1981, Ser. No. 255,468

Int. Cl.³ B32B *3/00*; G01L *9/06, 1/22*

U.S. Cl. 428—156 6 Claims



1. A diaphragm for a pressure transducer for use with piezoresistors comprising:

a rectangular planar monocrystalline semiconductor member having a predetermined crystallographic orientation of (110), having located on a major surface thereof a cavity of a parallelogram configuration defining an active diaphragm area with said cavity characterized in having steep sloped vertical walls formed by an anisotropic etching with the said walls aligned to the <111> plane of said monocrystalline semiconductor member, whereby said diaphragm exhibits a maximum response in only the longitudinal stress mode suitable for the use of piezoresistive elements operating in the longitudinal peizoresistive mode.

4,359,499

PACKAGING MATERIAL FOR PHOTOSENSITIVE MATERIALS

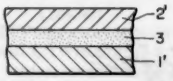
Mutsuo Akao, and Kenzo Kashiwagi, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 17, 1981, Ser. No. 235,229

Claims priority, application Japan, Feb. 15, 1980, 55-18088

Int. Cl.³ B32B *27/00, 27/16*

U.S. Cl. 428—201 15 Claims



1. A packaging material for photosensitive materials which consists of a uniaxially oriented thermoplastic film oriented with respect to the longitudinal axis of the film at an angle of 45° to 89.9° and having formed thereon at least one flexible layer, which is not uniaxially oriented, having a tear strength less than that of the film in the direction perpendicular to the axis of orientation of the film.

4,359,500

ALKYLATED ISOADIPOGUANAMINE-FORMALDEHYDE CROSSLINKING RESIN AND IMPROVED COATING COMPOSITIONS PRODUCED THEREFROM

Francis E. Schweitzer, Philadelphia, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 176,551, Aug. 8, 1980. This application Oct. 29, 1981, Ser. No. 316,109

Int. Cl.³ B32B *7/04, 27/42*

U.S. Cl. 428—212 1 Claim

1. A substrate coated with a first cured improved coating composition and subsequently overlaid with a second cured improved coating composition, wherein:

(A) said first composition contains pigment and said second composition is unpigmented; and

(B) both said first improved composition and said second improved composition are of the kind having

(1) binder constituents consisting essentially of a film-forming material and a crosslinker for the film-forming material, wherein the film-forming material is selected from the group consisting of acrylic resins, polyester or alkyd resins, and epoxy resins, or mixtures of these, and

(2) a solvent for the binder constituents,

wherein the improvement is characterized in that the crosslinker for the film-forming material is an alkylated isoadipoguanamine-formaldehyde resin consisting essentially of the reaction product of:

(1) an isoadipoguanamine mixture consisting essentially of:

(a) about 87–95 percent by weight, based on the weight of the isoadipoguanamine mixture, of 2-methylglutaroguanamine,

(b) about 4–12 percent by weight, based on the weight of the isoadipoguanamine mixture, of 2-ethylsuccinoguanamine, and

(c) about 1–2 percent by weight, based on the weight of the isoadipoguanamine mixture, of adipoguanamine;

(2) from 3–6 moles of formaldehyde per mole of said isoadipoguanamine mixture; and

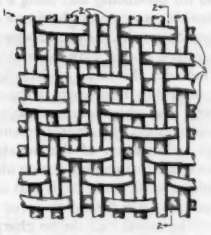
(3) a stoichiometric excess of an aliphatic alcohol having 1-4 carbon atoms or of a mixture of such alcohols.

4,359,501

HYDROLYSIS RESISTANT POLYARYLETHERKETONE FABRIC

Venanzio DiTullio, Perth, Canada, assignor to Albany International Corp., Albany, N.Y.

Filed Oct. 28, 1981, Ser. No. 315,925
Int. Cl.³ B32B 5/06
U.S. Cl. 428—245 7 Claims



1. A fabric having machine direction and cross machine direction threads interwoven with one another in a repeated pattern and finished into an endless belt, wherein certain of the threads are a monofilament of a melt extrudable polyaryletherketone selected from the group consisting of polyetherketones having repeating units of -[-Φ—O—Φ—CO-]- or -[-Φ—Φ—O—Φ—CO-]- and polyetheretherketones having repeating units of -[-Φ—O—Φ—CO—Φ—O-]-.

4,359,502

METHOD FOR JOINING HEAT-RECOVERABLE SHEET MATERIAL AND RESULTING ARTICLE

Dennis A. Caponigro, Pleasanton, and Eugene F. Lopes, Sunnyvale, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Division of Ser. No. 953,682, Oct. 23, 1978, Pat. No. 4,200,676, which is a continuation of Ser. No. 664,275, Mar. 5, 1976, abandoned. This application Nov. 1, 1979, Ser. No. 90,490
Int. Cl.³ B32B 7/00, 7/10
U.S. Cl. 428—251 16 Claims

1. An article of manufacture comprising:
(a) a polymer layer having associated therewith a reinforcing member and
(b) an adhesive coating comprising a mixture of a normally adhesive heat softenable polymer and an aromatic tackifier, said coating being on one surface of said reinforced polymer layer said reinforced polymer and said adhesive polymer having been crosslinked.

4,359,503

MIXED POLYVALENT-MONOVALENT METAL COATING FOR CARBON-GRAPHITE FIBERS

Jan Harper-Tervet; Fred W. Tervet, both of Palmdale, and Marshall F. Humphrey, Duarte, all of Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jun. 30, 1980, Ser. No. 164,584
Int. Cl.³ B32B 19/02
U.S. Cl. 428—367 11 Claims

1. A composition of matter comprising:
30% to 70% by weight of graphite fibers coated with 0.1 to 10% by weight of the fibers of a gasification catalyst comprising a mixture of a monovalent alkali metal salt and polyvalent alkaline earth metal salt having a work function below 4.2 eV; said monovalent metal salt comprising 5 to 95% by weight of said mixture; and
the remainder consisting essentially of binder resin and said coated fibers being embedded and dispersed in said binder resin.

4,359,504

DUAL-LAYER COATING CONTAINING ALUMINUM-FLAKE PIGMENT AND COATED ARTICLE

Daniel J. Troy, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 28, 1979, Ser. No. 80,084
Int. Cl.³ B32B 5/16, 27/08
U.S. Cl. 428—403 13 Claims

1. A substrate coated with an improved dual-layer high-solids enamel coating of the kind wherein the coating comprises
(A) a cured base layer produced from a composition having
(1) binder constituents consisting essentially of a first film-forming material and a crosslinker for the film-forming material wherein the film-forming material is selected from the group consisting of acrylic resins, polyester resins, and alkyd resins having a weight-average molecular weight of 500–10,000;
(2) an organic solvent for the binder constituents in an amount of no more than 100% by weight of the binder; and
(3) chromatic and metallic-flake pigments; and
(B) a cured transparent top layer, deposited on said base layer, produced from a composition having
(1) binder constituents consisting essentially of a second film-forming material and crosslinker for the film-forming material wherein the film-forming material is selected from the group consisting of acrylic resins, alkyd resins, and polyester resins having a weight-average molecular weight of 500–10,000; and
(2) an organic solvent for the binder constituents in an amount of no more than 100% by weight of the binder,
wherein the improvement is characterized in that the metallic-flake pigment is present in the base layer in an amount of 10–24% by weight, based on the weight of the binder constituents of the base layer, and the chromatic pigment is present in an amount sufficient with the amount of the metallic-flake pigment to give the dual-layer coating a flake orientation index of at least 40.

4,359,505

LIGHT COLORED ROOFING GRANULES

Ingo B. Joedicke, Hedgesville, W. Va., assignor to GAF Corporation, New York, N.Y.

Filed Feb. 11, 1981, Ser. No. 233,343
Int. Cl.³ B32B 19/04
U.S. Cl. 428—404 10 Claims

1. Aqueous coating composition suitable for coating roofing granules and comprising:
(a) water;
(b) kaolin clay;
(c) sodium silicate;
(d) titanium dioxide; and
(e) bleaching agent selected from the group consisting of ammonium nitrate or nitrate of one or more group 1A metal, said bleaching agent being present in amounts between about 1 and about 4 wt. % based on the amount of kaolin clay in the coating composition.

4,359,506
TIE LAYER FOR CO-EXTRUDED ACRYLONITRILE COPOLYMERS

Wayne T. Wiggins, Aurora, and Frank S. Gerry, Hudson, both of Ohio, assignors to Sohio, Cleveland, Ohio

Continuation-in-part of Ser. No. 20,569, Mar. 15, 1979, abandoned. This application Dec. 17, 1980, Ser. No. 217,310
Int. Cl.³ B32B *27/36, 27/06, 27/30, 27/32*
U.S. Cl. 428—412 20 Claims

1. A laminated structure comprising
(I) a first outer layer composed of a nitrile barrier resin,
(II) a tie layer comprising a mixture of
(1) a nitrile barrier resin, and
(2) a halogenated polyolefin, and
(3) a thermoplastic resin other than (1) and (2), and
(III) a second outer layer composed of a thermoplastic resin.

4,359,507
MIXED ETHYLENE AND PROPYLENE CARBONATE-CONTAINING ORGANIC POLYISOCYANATE ADHESIVE BINDER COMPOSITION

James M. Gaul, Exton, and Tinh Nguyen, Chaddsford, both of Pa., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Nov. 19, 1981, Ser. No. 322,794
Int. Cl.³ B32B *21/02, 21/14*
U.S. Cl. 428—425.1 21 Claims

1. An adhesive binder composition for the preparation of compression moldable lignocellulosic articles which comprises from about 20 to 95 percent by weight of an organic di- or polyisocyanate and from about 5 to 80 percent by weight of a liquid mixture of ethylene carbonate and propylene carbonate containing from about 5 to 80 weight percent ethylene carbonate.

7. A compression moldable lignocellulosic composition comprising lignocellulosic particles and from about 1.5 to 12 percent by weight based on oven dried particles of an adhesive binder composition which comprises from about 20 to 95 weight percent organic di- or polyisocyanate and from about 5 to 80 weight percent of a liquid mixture of ethylene carbonate and propylene carbonate containing from about 5 to 80 weight percent ethylene carbonate.

15. A composition board product comprising a compression molded lignocellulosic composition comprising lignocellulosic particles and from about 1.5 to 12 weight percent based on oven dried lignocellulosic particles employed of an adhesive binder composition, said binder composition being a mixture of from about 20 to 95 weight percent organic di- or polyisocyanate and from 5 to 80 weight percent of a liquid mixture of ethylene carbonate and propylene carbonate containing from about 5 to 80 weight percent ethylene carbonate.

18. A method for the preparation of lignocellulosic composite articles comprising the steps of
(a) mixing together lignocellulosic particles and from about 1.5 to 12 weight percent based on oven dried lignocellulosic particles of an adhesive binder composition comprising from 20 to 95 weight percent organic di- and polyisocyanate and from about 5 to 80 weight percent of a liquid mixture of ethylene carbonate and propylene carbonate containing from about 5 to 80 weight percent ethylene carbonate to form a moldable composition;
(b) introducing said moldable composition onto a metal mold, caul plate or platen which has been sprayed or coated with a release agent;
(c) compression shaping said composition at temperatures of between about 140° C. to 220° C. at pressures of from about 100 to 600 psi for a period of from about 1 to 10 minutes to form a composite article of desired shape and/or thickness; and
(d) thereafter releasing said lignocellulosic composite article from said metal mold, caul plate or platen.

4,359,508
LEAD-ACID STORAGE BATTERY

Richard M. Meighan, Lansdale, and Harry R. Cash, Jr., Jeffersonville, both of Pa., assignors to Eltra Corporation, Toledo, Ohio

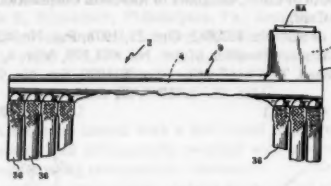
Filed Dec. 9, 1980, Ser. No. 214,735
Int. Cl.³ H01M *10/12*
U.S. Cl. 429—52 5 Claims

1. In a method for producing and using a dry charged storage battery comprising a container having a cell compartment and a dry charged battery element composed of a plurality of positive and negative plates with separators therebetween, which method includes the steps of forming and drying the battery element, installing the element in the cell compartment, storing the battery, and, ultimately, activating the battery and placing it in float service, the improvement of reducing the initial on charge polarization of the negative plates to not greater than zero while maintaining the on charge polarization of the positive plates sufficiently high that complete anodization of bare metal thereof is forced to occur when the battery is first charged to the extent that the on charge polarization of the positive plates becomes greater than zero.

4,359,509
TUBULAR POSITIVE ELECTRODE MEANS FOR USE IN LEAD-ACID STORAGE BATTERIES INCLUDING SHAPED GRID STRUCTURE AND SELF-REGISTERING GRID COMPLEMENT MEANS THEREFOR

Roy A. Guimond, Holden; John E. Gulliksen, Shrewsbury, and Nanci W. Reed, Sudbury, all of Mass., assignors to Koehler Manufacturing Company, Marlborough, Mass.

Filed Feb. 27, 1981, Ser. No. 239,159
Int. Cl.³ H01M *2/18*
U.S. Cl. 429—140 8 Claims



1. Improved tubular positive electrode means for use in a lead-acid storage battery, said electrode means including a grid structure consisting of a top bar, a lug portion extending from one side thereof, and spaced apart spine portions extending outwardly from an opposite side thereof, said top bar presenting shaped spaced apart surfaces of a predetermined configuration, a plastic grid complement member for selectively enclosing portions of the said grid structure, said grid complement being formed with spaced apart angularly displaceable side portions which are selectively self-registering with the predetermined shaped surfaces of the grid structure when these components are in assembled relationship with one another.

4,359,510
HYDROPHILIC POLYMER COATED MICROPOROUS MEMBRANES CAPABLE OF USE AS A BATTERY SEPARATOR

Henry T. Taskier, Fanwood, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed Jul. 31, 1980, Ser. No. 174,146
The portion of the term of this patent subsequent to Nov. 3, 1998, has been disclaimed.
Int. Cl.³ H01M *2/14*
U.S. Cl. 429—144 13 Claims

1. A hydrophilic open-celled microporous membrane which

comprises a normally hydrophobic microporous membrane, having deposited on at least one surface thereof a coating comprising a polymer selected from the group consisting of cellulose esters, and polyvinyl alcohol, said coating having a dry thickness of from about 1 to about 25 microns, and a surfactant disposed within said coated microporous membrane in a manner and in at least an amount sufficient to render the substrate microporous membrane hydrophilic.

4,359,511

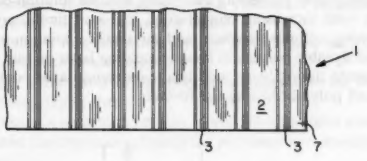
BATTERY SEPARATOR MATERIAL

Stanley J. Strzempko, South Hadley, Mass., assignor to Texon Inc., South Hadley, Mass.

Continuation of Ser. No. 164,588, Jun. 30, 1980, abandoned. This application Dec. 28, 1981, Ser. No. 334,895

Int. Cl.³ H01M 2/16

U.S. Cl. 429—252 **18 Claims**



1. A battery separator material comprised of:

discrete polyolefin pulp fibers in a sufficient amount to enable the battery separator material to be heat sealed to itself along its edges;

said fibers being bound by an organic polymeric binder to form a sheet material.

4,359,512

LAYERED PHOTOCONDUCTIVE MEMBER HAVING BARRIER OF SILICON AND HALOGEN

Tadaji Fukuda, Kawasaki; Shigeru Shirai, Yamato, and Junichiro Kanbe, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 5, 1981, Ser. No. 240,838

Claims priority, application Japan, Jun. 9, 1980, 55/78059

Int. Cl.³ G03G 5/09, 5/082

U.S. Cl. 430—57 **36 Claims**

1. A photoconductive member comprising a substrate for the photoconductive member, a photoconductive layer, and a barrier layer arranged between the substrate and the photoconductive layer, said barrier layer having a function which inhibits injection of carriers from the side of said substrate into said photoconductive layer, characterized in that at least one of said photoconductive layer and said barrier layer is made of an amorphous material in which silicon atom is a matrix and halogen atom is a constituent atom, a depletion layer region is created at the interfacial region between the photoconductive layer and the barrier layer, a part of said barrier layer is present between said depletion layer region and said substrate in a thickness capable of bringing substantially negligible probability which the carriers having the same polarity as that of the minor carriers in said barrier layer reaches said depletion layer region from the side of said substrate in order to inhibit injection of the carriers having the same polarity as that of the minor carriers in said barrier layer from the side of said substrate to said photoconductive layer, and the photocarriers having the same polarity as that of the major carriers in said barrier layer among photocarriers generating in said photoconductive layer by irradiation of an electromagnetic waves are moved in the direction of said barrier layer.

9. A photoconductive member according to claim 1, in which a barrier layer is constructed with an amorphous material in which silicon atom is a matrix and hydrogen atom is a constituent atom.

4,359,513

ELECTROPHOTOGRAPHIC LIGHT-SENSITIVE DISAZO COMPOUNDS HAVING DIPHENYLACRYLONITRILE GROUP

Kazuharu Katagiri; Katsunori Watanabe; Shigeto Ohta; Shozo Ishikawa, and Makoto Kitahara, all of Tokyo, Japan, assignors to Copyer Co., Ltd. and Canon Inc., both of Tokyo, Japan

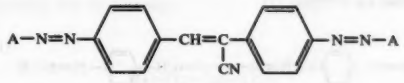
Filed Feb. 19, 1981, Ser. No. 235,798

Claims priority, application Japan, Feb. 19, 1980, 55-18575

Int. Cl.³ G03G 5/06

U.S. Cl. 430—58 **12 Claims**

1. An electrophotographic light-sensitive medium comprising a light-sensitive layer containing a dis-azo compound represented by Formula (1)



(1)

wherein A represents a coupler having aromatic properties.

6. An electrophotographic light-sensitive medium as in claim 1, 2, 3, 4 or 5, wherein the light-sensitive medium comprises an electrically conductive layer, a light-sensitive charge generation layer containing the dis-azo compound represented by Formula (1), and a charge transport layer.

4,359,514

PHOTOCONDUCTIVE MEMBER HAVING BARRIER AND DEPLETION LAYERS

Isamu Shimizu, Yokohama; Shigeru Shirai, Yamato, and Eiichi Inoue, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 5, 1981, Ser. No. 240,836

Claims priority, application Japan, Jun. 9, 1980, 55-78058

Int. Cl.³ G03G 5/14

U.S. Cl. 430—65 **9 Claims**

1. A photoconductive member which comprises:

(a) a substrate;

(b) a photoconductive layer;

(c) a barrier layer provided between said substrate and said photoconductive layer, and having a function of substantially inhibiting injection of carriers from the substrate side to the photoconductive layer; and

(d) a depletion layer region created in the interfacial region of said photoconductive layer and said barrier layer,

said photoconductive layer and said barrier layer being made of an amorphous material with silicon as a matrix and hydrogen as a constituent atom,

a part of said barrier layer being present between the depletion layer region and the substrate in such a thickness that, in order to inhibit injection of carriers having the same polarity as that of the minority carriers in said barrier layer from said substrate side to said photoconductive layer, probability of said carriers reaching said depletion layer region from said substrate side may be substantially neglected,

the photo-carriers in said photoconductive layer having the same polarity as that of majority carriers in said barrier layer, among said photo-carriers to be generated in said photoconductive layer by irradiation of electromagnetic waves, being caused to move in the direction of the barrier layer,

said barrier layer having a layer thickness of from 0.02 to 0.5 microns and containing as impurity to govern the conductive type thereof an atom in Group III-A or V-A of the Periodic Table, and

said photoconductive layer having a layer thickness of from

1 to 70 microns and a resistance value of 5×10^9 ohm-cm and greater, and containing as impurity to govern the conductive type thereof an atom in Group III-A of the Periodic Table, or not containing such impurity.

4,359,515

DISAZO ELECTROPHOTOGRAPHIC LIGHT-SENSITIVE MEDIA

Kazuharu Katagiri; Katsunori Watanabe; Shigeto Ohta; Shozo Ishikawa, and Makoto Kitahara, all of Tokyo, Japan, assignors to Copyer Co., Ltd. and Canon Inc., both of Tokyo, Japan

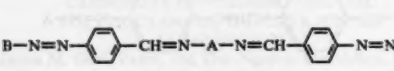
Filed Feb. 25, 1981, Ser. No. 238,281

Claims priority, application Japan, Feb. 25, 1980, 55-21670

Int. Cl.³ G03G *5/06;* **C09B** *31/02, 31/14, 33/02*

U.S. Cl. 430—70 **16 Claims**

1. An electrophotographic light-sensitive medium comprising a light-sensitive layer containing a dis-azo compound represented by Formula (1)



(1)

wherein A is a member selected from the group consisting of a single chemical bond, a divalent hydrocarbon group containing a conjugated double bond, a divalent hydrocarbon group containing a nitrogen atom in a conjugated double bond and a divalent heterocyclic group which may be condensed with a benzene ring or substituted and forms a conjugated double bond system in combination with the adjacent azomethine groups, and B and B′, which may be the same or different, each represents a coupler having aromatic properties.

4,359,516

MAGNETIC RESIST PRINTING PROCESS, COMPOSITION, AND APPARATUS

George R. Nacci, and Donald G. Pie, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 130,424, Mar. 14, 1980, which is a division of Ser. No. 15,799, Mar. 2, 1979, abandoned, which is a continuation-in-part of Ser. No. 890,973, Mar. 28, 1978, abandoned. This application Nov. 21, 1980, Ser. No. 209,195

Int. Cl.³ G03G *19/00, 9/14*

U.S. Cl. 430—106.6 **13 Claims**

1. A dry particulate resist composition of particles having an average size of 1 to 30 μm, a melt index of 1 to 100 and a glass transition temperature from 25° C. to 100° C., for substantially instantaneous application to a heated surface to form a resist image capable of withstanding modification of an exposed area of said surface, comprising

(a) a coalescible binder consisting essentially of a thermoplastic resin having a weight average molecular weight of at least 1,000 and less than 50,000 and 2 to 40% of plasticizer based on the weight of said binder, said plasticizer having a boiling point above 200° C., and

(b) magnetic material having an average particle size of less than 6 μm present in said binder rendering the particles of said composition magnetically attractible, said magnetic material constituting from 40 to 80% by weight of the combination of (a) plus (b) and said binder constituting the remainder,

the combination of said binder and said magnetic material in said particles rendering them substantially nonblocking at ordinary room temperature and adherent to said surface and coalescible thereon upon said application to said surface to form a resist image, whereby said composition has a tack transfer window greater than 8° C.

4,359,517

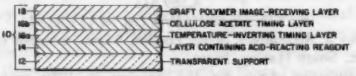
DIFFUSION TRANSFER PRODUCTS WITH TWO TIMING LAYERS FOR PRODUCTION OF TRANSPARENCIES

Gerard J. Bourgeois, Kingston, N.H., assignor to Polaroid Corporation, Cambridge, Mass.

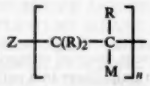
Filed Apr. 30, 1981, Ser. No. 259,102

Int. Cl.³ G03C *1/40, 5/54*

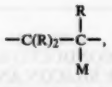
U.S. Cl. 430—213 **43 Claims**



1. An image-receiving element for use in a diffusion transfer photographic process adapted to the provision of a transparency image comprising a transparent support carrying, in sequence, an acid-reacting reagent layer; a first polymeric timing layer possessing decreasing alkaline solution-permeability with increasing temperature; a second timing layer comprising cellulose acetate; and an alkaline solution-permeable and dyeable polymeric image-receiving layer on said cellulose acetate timing layer, said image-receiving layer comprising a graft polymer having the formula



wherein Z is an organic polymeric backbone and wherein the grafted entity,



is the grafted residue of a graftable compound where M is a moiety which can provide a mordant capability, each R is the same or different substituent which will not hinder grafting of the mordant through the vinyl group, and n is a positive integer.

4,359,518

STRIPPING SHEET FOR USE WITH DIFFUSION TRANSFER FILM UNIT

Raymond B. Hanselman, Concord, and Karl J. Schreiber, Waban, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Jun. 26, 1981, Ser. No. 277,944

Int. Cl.³ G03C *5/54, 7/00*

U.S. Cl. 430—236 **22 Claims**

1. A method which comprises the steps

(a) exposing a diffusion transfer film unit comprising a support carrying, in order, an image-receiving layer, and a photosensitive silver halide emulsion layer;

(b) disposing a liquid processing composition intermediate a stripping sheet and the outermost layer of said film unit distal to the support;

(c) contacting said outermost layer of said film unit distal to the support with said stripping sheet wherein said stripping sheet comprises a support carrying, in order, a water-absorbing layer and a timing layer capable of conversion from substantial liquid processing composition impermeability to a condition of substantial liquid processing composition permeability; whereby said timing layer converts from said substantial liquid processing composition impermeability to said substantial liquid processing composition

permeability thereby forming a bond between said outermost layer and said stripping sheet; and

(d) detaching said stripping sheet and at least the photosensitive layer of the film unit adhered to said stripping sheet from the rest of the film unit.

4,359,519
PROCESS FOR FORMING A HIGH RESOLUTION RECORDING MEDIUM

Heinz Kraus, Traunreut, and Erich Bayer, Trostberg, both of Fed. Rep. of Germany, assignors to Dr. Johannes Heidenhain GmbH, Traunreut, Fed. Rep. of Germany

Filed Jan. 29, 1980, Ser. No. 116,494

Claims priority, application Fed. Rep. of Germany, Jan. 31, 1979, 2903641

Int. Cl.³ G03C *5/00, 7/00;* **G02B** *5/28;* **B44F** *1/08*

U.S. Cl. 430—321 **2 Claims**

1. A process for producing a high resolution recording medium comprising the following steps:

(a) applying a first reflecting layer of an inorganic material to a first side of a substrate;

(b) apply a first layer of photosensitive material to the first reflecting layer; then

(c) exposing a patterned portion of the photosensitive material and thereupon developing the photosensitive material; then

(d) removing those portions of the first reflecting layer not covered by photosensitive material by wet chemical etching, wherein etching agent is applied to the first reflecting layer as a spray; then

(e) removing the remaining photosensitive material; then

(f) applying an interference layer to the first side of the substrate, said interference layer having a substantially uniform thickness and comprising an inorganic material which is substantially absorption-free in the visible range of the spectrum;

(g) applying at least a second reflecting layer of inorganic material to the interference layer;

(h) applying a second layer of photosensitive material to the second reflecting layer; then

(i) exposing a patterned portion of the photosensitive material and thereupon developing the photosensitive layer; then

(j) removing those portions of the second reflecting layer not covered by photosensitive material by wet chemical etching, wherein etching agent is applied to the second reflecting layer as a spray; and then

(k) removing the remaining photosensitive material.

4,359,520
ENHANCEMENT OF RESIST DEVELOPMENT

James A. Carothers; James Economy, and Augustus C. Ouano, all of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 854,440, Nov. 23, 1977, abandoned. This application May 7, 1979, Ser. No. 36,461

Int. Cl.³ G03C *5/00*

U.S. Cl. 430—326 **5 Claims**

1. A process for increasing the solubility rate ratio of a quinone-diazo or quinone-triazo sensitized phenolic-aldehyde resist, said process comprising contacting the resist under anhydrous conditions either before or after the resist has been subjected to imagewise exposure to radiation with an anhydrous trialkylamine which is in the liquid state and which contains from two to eight carbon atoms in each alkyl group, and then contacting said resist with an aqueous alkaline developer to dissolve the exposed regions.

4,359,521
LIGHT-SENSITIVE COLOR PHOTOGRAPHIC MATERIAL

Mario Fryberg, Praroman-le-Mouret; Remon Hagen, Marly, both of Switzerland, and John G. V. Scott, Little Baddow, England, assignors to Ciba-Geigy AG, Basel, Switzerland

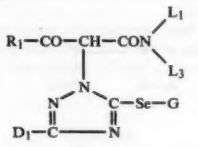
Continuation of Ser. No. 945,153, Sep. 22, 1978, abandoned. This application Dec. 19, 1979, Ser. No. 105,174

Claims priority, application Switzerland, Sep. 29, 1977, 11906/77; Dec. 29, 1977, 16180/77

Int. Cl.³ G03C *1/40*

U.S. Cl. 430—505 **7 Claims**

1. A light-sensitive colour photographic material which contains on a support in at least one silver halide emulsion layer containing a color-coupler capable of forming a high density image dye or in an inter-layer being free of silver halide and adjacent to said emulsion layer at least one DIR-coupler in an amount of 0.1 to 100% by weight, based on the weight of the color coupler, at least one DIR-coupler, wherein the DIR coupler has the formula



in which D_1 is hydrogen, alkyl having 1 to 4 carbon atoms, benzyl or chlorine and L_3 is phenyl or phenyl substituted by alkoxy having 1 to 5 carbon atoms, chlorine, acylamino or carboxamido, the two last mentioned radicals optionally carry ballast groups on the nitrogen atoms, R_1 is straight-chain or branched alkyl having 3 to 10 carbon atoms, phenyl or phenyl substituted by halogen, alkyl or alkoxy, each having 1 to 4 carbon atoms, or the radicals —OCH_2O— and —OCH_2CH_2O—, L_1 is hydrogen or alkyl having 1 to 5 carbon atoms and G is a substituted or unsubstituted aliphatic hydrocarbon radical having 1 to 18 carbon atoms, the sum of the carbon atoms in the substituents D_1 and G being at least 5.

4,359,522
PHOTOGRAPHIC ELEMENT CONTAINING A UV-FILTER LAYER

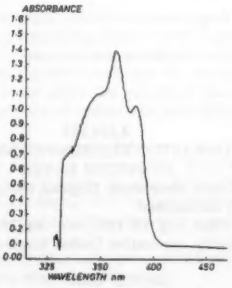
Stephen R. Postle, Brentwood, England, assignor to Ciba-Geigy AG, Basel, Switzerland

Filed Aug. 10, 1981, Ser. No. 291,696

Claims priority, application United Kingdom, Aug. 29, 1980, 8028070

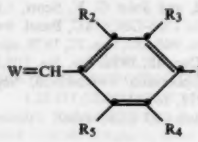
Int. Cl.³ G03C *1/78*

U.S. Cl. 430—512 **12 Claims**



1. A light-sensitive photographic element which contains a

silver halide emulsion layer and as a uv-filter layer a layer comprising a compound of the formula

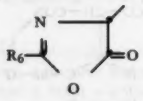


(1)

wherein

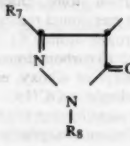
R_1, R_2 and R_5 are each hydrogen or halogen or a group of the formula $—OCOR_{10}$, wherein R_{10} is optionally substituted alkyl or alkoxy having from 1 to 30 carbon atoms, or is optionally substituted alkaryl or aryl,

R_3 and R_4 are each hydrogen or alkoxy having 1 to 6 carbon atoms, W is a residue of the formula



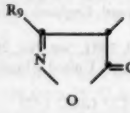
(2)

where R_6 is optionally substituted phenyl, or W is a residue of the formula



(3)

wherein R_7 is alkyl having 1 to 6 carbon atoms, aryl, carboxylic acid or alkoxycarbonyl, wherein the alkoxy moiety contains 1 to 6 carbon atoms and R_8 is aryl or a residue of the general formula



(4)

wherein R_9 is alkyl having 1 to 6 carbon atoms or optionally substituted aryl.

4,359,523

PHOTOGRAPHIC ELEMENT CONTAINING A UV-FILTER LAYER

Stephen R. Postle, Brentwood, England, assignor to Ciba-Geigy AG, Basel, Switzerland

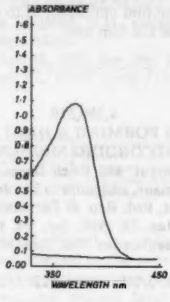
Filed Aug. 10, 1981, Ser. No. 291,697

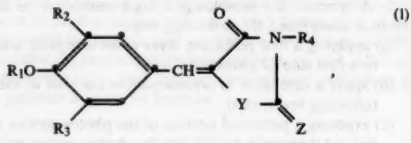
Claims priority, application United Kingdom, Aug. 29, 1980, 8028071

Int. Cl.³ G03C *1/78*

U.S. Cl. 430—512 **17 Claims**

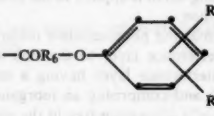
1. A light-sensitive photographic element which contains a silver halide emulsion layer and non-light sensitive uv-filter layer comprising a compound of the formula





(1)

wherein R_1 is alkyl containing at least 10 carbon atoms or a group of the formula



(2)

wherein R_6 is alkylene having from 1 to 5 carbon atoms and R_7 and R_8 are each alkyl having at least 8 carbon atoms, or one of R_7 and R_8 can be hydrogen, R_2 and R_3 are each hydrogen or alkoxy having from 1 to 6 carbon atoms, Z is oxygen or sulphur, Y is oxygen or sulphur or a group $—NR_5—$, wherein R_5 is hydrogen or optionally substituted alkyl, aryl or carboxyalkyl, and R_4 is hydrogen or optionally substituted alkyl, aryl or carboxyalkyl.

4,359,524

HEAT DEVELOPABLE PHOTOSENSITIVE MATERIAL

Takao Masuda; Itsuo Fujiwara; Yoshimasa Aotani, and Isamu Itoh, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 15, 1981, Ser. No. 283,413

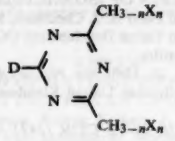
Claims priority, application Japan, Jul. 15, 1980, 55-96340

Int. Cl.³ G03C *1/84*

U.S. Cl. 430—522 **13 Claims**

1. A heat-developable photosensitive material is described comprising a heat-developable photosensitive layer containing at least an organic silver salt, a photocatalyst, and a reducing agent, wherein the improvement is an antihalation layer comprising a light bleachable colored composition composed of at least (1) a photosensitive halogen-containing compound, and (2) a merocyanine dye, provided on the opposite side of said heat-developable photosensitive layer with respect to the side intended for imagewise exposure, said photosensitive halogen-containing compound (1) forming a halogen radical or hydrohalogenic acid by light decomposition thereof and said photosensitive halogen-containing compound being selected from the group consisting of:

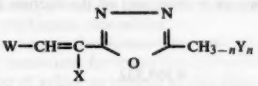
compounds represented by Formula (III)



(III)

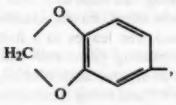
wherein D represents an alkyl group having from 1 to 5 carbon atoms, which may be substituted with halogen atoms, or an aryl group having from 6 to 10 carbon atoms, and n represents an integer of 1 to 3; and

compounds represented by Formula (IV)



(IV)

wherein W represents a substituted or unsubstituted phenyl group or a substituted or unsubstituted naphthyl group, wherein the phenyl group may be substituted with halogen atoms, nitro group, a cyano group, an alkyl group having from 1 to 3 carbon atoms or an alkoxy group having from 1 to 4 carbon atoms, or the phenyl group has the structure



the number of substituents is 1 or 2 in the case of halogen atoms, and is 1 in other cases, X represents hydrogen, an alkyl group having from 1 to 3 carbon atoms, or phenyl group, Y represents a halogen atom, and n represents an integer of 1 to 3.

4,359,525

METHOD OF PREPARING A PHOTOSENSITIVE SILVER HALIDE ELEMENT

Arthur M. Gerber, Belmont, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Nov. 23, 1981, Ser. No. 323,936
Int. Cl.³ G03C 5/26; E03C 1/02
U.S. Cl. 430—567 **9 Claims**

1. A method for forming a photosensitive element comprising a plurality of single effective silver halide grains in a predetermined spaced array which comprises coalescing fine-grain silver halide by heating said fine-grain silver halide at least to its melting point in a plurality of predetermined spaced depressions.

4,359,526

METHOD FOR FORMING A PHOTOSENSITIVE SILVER HALIDE ELEMENT

Vivian K. Walworth, Concord, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Sep. 2, 1981, Ser. No. 298,637
Int. Cl.³ G03C 1/76, 1/02
U.S. Cl. 430—568 **19 Claims**

1. A method for forming a photosensitive element comprising a plurality of single effective silver halide grains in a predetermined spaced array which comprises coalescing a fine-grain silver halide emulsion in a plurality of predetermined spaced depressions in a surface by contacting said fine-grain emulsion with a silver halide solvent in the vapor phase.

4,359,527

CANCER DIAGNOSTIC ASSAY

Bruce R. Zetter, Boston, Mass., assignor to The Children's Hospital Medical Center, Boston, Mass.

Filed Oct. 27, 1980, Ser. No. 201,293
Int. Cl.³ C12Q 1/29
U.S. Cl. 435—29 **6 Claims**

1. An in vitro cancer diagnostic assay comprising

providing a substratum coated with a layer of visible particles susceptible to ingestion by capillary endothelial cells,

plating capillary endothelial cells onto said substratum,

allowing said capillary endothelial cells to adhere to said substratum,

incubating said adhered cells with medium comprising a test sample to be assayed for the presence of a factor associated with cancer cells,

measuring the area of the visible particle-depleted phagokinetic track left by at least one of said capillary endothelial cells, and

comparing said area with the phagokinetic track area left by at least one control capillary endothelial cell incubated under the same conditions, but in the absence of said test sample,

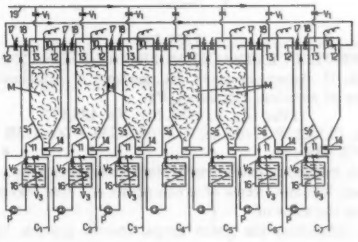
a comparatively larger phagokinetic track area left by said cells incubated with said test sample indicating the presence in said test sample of said factor associated with cancer cells.

4,359,528

CORN STEEPING PROCESS FOR PRODUCTS THUS OBTAINED AND THEIR USE IN THE MANUFACTURE OF PENICILLIN

Francis Devos, Merville; Patrick Beuque, Aubers, and Michel Huchette, Merville, all of France, assignors to Roquette Freres, Lestrem, France

Filed Aug. 28, 1980, Ser. No. 182,081
Claims priority, application France, Sep. 4, 1979, 79 22106
Int. Cl.³ C13L 1/00, 1/06
U.S. Cl. 435—43 **10 Claims**



1. Corn-steeping process producing corn-steep and comprising:

contacting corn grains placed in silos arranged in series with a steep water containing about 0.75 to 3 g sulfur dioxide per liter which water is introduced successively into each of the silos of the series such that the water traverses the silos one after the other, the volume of steep water in m^3 introduced per ton of commercial corn defining a cycling ratio;

maintaining the temperature of the steep water such that the temperature decreases progressively from silo to silo as the water passes through the silos from one to the next, from at the most about 58° C. in the input silo to about 32° C. at the outlet of the silo from which corn steep liquor is recovered;

maintaining the cycling ratio between 0.8 and 1.2 m^3 steep water per ton of commercial corn,

maintaining the soak time, during which the corn grains and steep water are in contact, between about 24 to 44 hours.

4,359,529

MICROBIAL PROCESS FOR PRODUCING CHOLANIC ACID DERIVATIVES

Masao Tsuji, and Yoshihiro Ichihara, both of Kurashiki, Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

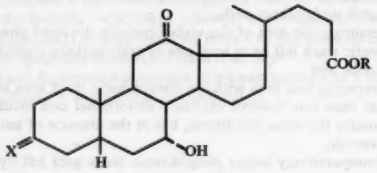
Filed Jul. 30, 1980, Ser. No. 173,815

Claims priority, application Japan, Aug. 21, 1979, 54-106768; Aug. 31, 1979, 54-112307; Sep. 27, 1979, 54-124866; Jun. 19, 1980, 55-83478

Int. Cl.³ C12P *33/00*

U.S. Cl. 435—52 10 Claims

1. A microbial process for producing a cholanic acid derivative of the formula:



wherein X is

or =O; and R is hydrogen, an alkali metal or an alkaline earth metal, which comprises cultivating a microbe which is capable of growing in a medium containing cholic acid or salt thereof as a substrate to produce the cholanic acid derivatice and is selected from the group consisting of *Arthrobacter* sp., *Brevibacterium* sp. and *Corynebacterium* sp., in a culture medium containing the substrate and collecting the resulting derivative.

4,359,530

PROTEIN EXTRACTION FROM GREEN CROPS

Melvin H. Brown, Freeport, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Sep. 8, 1980, Ser. No. 185,177

Int. Cl.³ C12P *21/00;* C07G *7/00;* A23J *1/00;* A23B *4/12*

U.S. Cl. 435—68 4 Claims

1. A method of extracting protein from green crops, leaves, grasses, legumes, stems of green plants and tree leaves, comprising the steps of:

(a) subjecting the green crops, leaves, grasses, legumes, stems of green plants and tree leaves to a hammering action for purposes of rupturing plant cell walls, the hammering taking place in an organic acid solution, having a pH in the range of 3.0 to 5.5 and being recirculated from subsequent fermentation separation step (c) to produce a pulp comprising a protein-rich liquid and fibrous material, the solution being present in amounts sufficient to aid in hammering and maintaining fluidity of the pulp;

(b) separating protein-rich liquid in the pulp from the fibrous material;

(c) separating protein from the protein-rich liquid by fermentation using anaerobic naturally occurring microorganisms, the fermentation conducted in an acidic solution thereby providing a concentrated protein fraction suitable for preservation and an acidic solution; and

(d) recycling at least a portion of the acidic solution to the separation of step (b), the recycling of the solution being provided to insure further removal of protein from the fibrous material.

4,359,531

PRODUCTION OF ISOMALTULOSE

Christopher Bucke, and Peter S. J. Cheetham, both of Reading, England, assignors to Tates Development (N.A.) N.V., Curacao, Netherlands Antilles

Filed Oct. 28, 1980, Ser. No. 201,462

Claims priority, application United Kingdom, Nov. 7, 1979, 7938563

Int. Cl.³ C12P *19/18, 19/12;* C12R *1/425;* C12N *11/10*

U.S. Cl. 435—97 12 Claims

1. A process for the production of isomaltulose, which process consists essentially of immobilizing by entrapment within a calcium alginate gel at least the isomaltulose-forming enzyme system of an isomaltulose-forming micro-organism of the genus Erwinia and then contacting the immobilized enzyme system with a sucrose solution containing at least 30% (w/v) of sucrose to convert at least part of the sucrose to isomaltulose.

4,359,532

METHOD FOR GLUCOSE EXTRACTION FROM GREEN CROPS

Melvin H. Brown, Freeport, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Sep. 8, 1980, Ser. No. 185,178

Int. Cl.³ C12P *19/14, 21/00;* C07G *7/00;* C13K *1/02*

U.S. Cl. 435—99 4 Claims

1. An improved method suitable for extracting glucose from green crops, leaves, grasses, legumes, stems of green plants and tree leaves, comprising the steps of:

(a) subjecting green crops, leaves, grasses, legumes, stems of green plants and tree leaves to a hammering action for purposes of rupturing plant cell walls, the hammering taking place in an organic acid solution, having a pH in the range of 3.0 to 5.5 and being recirculated from subsequent fermentation separation step (c) to produce a pulp comprising a protein-rich liquid and fibrous material, the solution being present in amounts sufficient to aid in hammering and maintaining fluidity of the pulp;

(b) separating protein-rich liquid in the pulp from the fibrous material;

(c) separating protein from the protein-rich liquid by fermentation using anaerobic naturally occurring microorganisms, the fermentation conducted in an acidic solution thereby providing a concentrated protein fraction suitable for preservation and an acidic solution;

(d) recycling at least a portion of the acidic solution to the separation of step (b), the recycling of the solution being provided for purposes of washing said fibrous material to remove residual protein therefrom; and

(e) subjecting the fibrous material to hydrolysis with at least one material selected from the group consisting of mineral acids and enzymes to permit increased recovery of glucose.

4,359,533

FERMENTATIVE ALCOHOL PRODUCTION

Charles R. Wilke, El Cerrito; Brian L. Maiorella; Harvey W. Blanch, both of Berkeley, all of Calif., and Gerald R. Cysewski, Kennewick, Wash., assignors to The United States of America as represented by the Department of Energy, Washington, D.C.

Filed Nov. 26, 1980, Ser. No. 210,485

Int. Cl.³ C12P *7/06*

U.S. Cl. 435—161 10 Claims

1. An improved fermentation process for producing alcohol which comprises the steps of:

conducting a fermentation phase at least in part under subatmospheric pressure at a temperature and for a period of time sufficient to produce a fermentation brew containing alcohol and a crude alcohol fraction;

and subjecting said crude alcohol fractin to a vacuum distillation phase to separate and recover high purity alcohol.

4,359,534

CONVERSION OF D-XYLOSE TO ETHANOL BY THE YEAST *PACHYSOLEN TANNOPHILUS*

Cletus P. Kurtzman, Peoria; Rodney J. Bothast, East Peoria, and James E. VanCauwenberge, Normal, all of Ill., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Apr. 28, 1981, Ser. No. 258,483
Int. Cl.³ C12P 7/06
U.S. Cl. 435—161 **11 Claims**

1. A method for producing ethanol from a xylose-containing substance comprising the following steps:

a. inoculating a medium containing said substance with the yeast *Pachysolen tannophilus;*

b. fermenting said substance in said inoculated medium under conditions favorable for cell viability and for conversion of xylose to ethanol by the yeast, thereby enriching said medium with ethanol; and

c. recovering said ethanol-enriched medium from the fermentation of step (b).

4,359,535

AUTONOMOUSLY REPLICATING DNA CONTAINING INSERTED DNA SEQUENCES

George Pieczenik, 515 West End Ave., New York, N.Y. 10024

Filed Oct. 1, 1979, Ser. No. 80,668
Int. Cl.³ C12N 1/00, 15/00; C12P 19/34; C12Q 1/68, 1/70
U.S. Cl. 435—317 **13 Claims**

1. A population of linear DNA molecules of an autonomously replicating DNA element, randomly cleaved, comprising circular permutations of the same nucleotide sequence, to the ends of which have been covalently attached an oligonucleotide of unique sequence, being an oligonucleotide of which its sequence does not otherwise exist in said DNA element.

4,359,536

FRIT GLASS COMPOSITION

William A. Graff, Willoughby, and Jaroslaw Kohut, Parma Heights, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 276,975, Jun. 24, 1981, abandoned. This application Feb. 16, 1982, Ser. No. 349,140
Int. Cl.³ C03C 5/00, 3/08
U.S. Cl. 501—25 **6 Claims**

1. A lead-free frit glass exhibiting transparency and gloss with an average thermal coefficient of expansion between 0°–300° C. in the range $75°–90\times10^{-7}/°$ C. consisting essentially of in weight percent on the oxide basis: 25–31 ZnO, 12–20 SiO_2, 19–35 B_2O_3, 1–4 Al_2O_3, 5–10 Na_2O, 7–9 CaO, 2–6 BaO, 0.5–4 ZrO_2, 1–2 F and 0–6 K_2O except for incidental impurities and refining agents.

4,359,537

EMULSION COPOLYMER ANION EXCHANGE RESINS

Berni P. Chong, North Wales, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed Sep. 19, 1978, Ser. No. 944,052
Int. Cl.³ C08F 6/22; B01J 39/20, 41/14
U.S. Cl. 521—29 **22 Claims**

1. Novel, readily dispersible, submicroscopic anion exchange resin particles comprising previously isolated, approximately spherical beads of crosslinked emulsion copolymer derived from polyethylenically unsaturated crosslinking monomers and monoethylenically unsaturated monomers selected from the group consisting of aromatic monoethylenically unsaturated monomers, acrylic monoethylenically unsaturated monomers, and mixtures thereof; having diameters within the range from about 0.01 to about 1.5 micrometers; and bearing from about 0.7 to about 1.5 anion exchange functional groups per monomer unit.

4,359,538

FIRE-RETARDANT POLYSTYRENIC COMPOSITIONS

Jean-Noel Marie Bertrand, Wezembeek-Oppem, Belgium, assignor to Labofina, S.A., Brussels, Belgium

Division of Ser. No. 22,257, Mar. 20, 1979, abandoned. This application Apr. 20, 1981, Ser. No. 255,812
Int. Cl.³ C08K 5/02, 5/17, 5/19, 5/20
U.S. Cl. 521—79 **20 Claims**

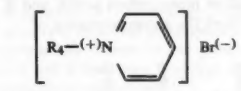
1. A self-extinguishing expanded polystyrenic composition comprising a homogeneous combination of an expanded polystyrenic resin, a fire-retardant amount of a halogenated organic fire-retardant agent and a nitrogen-containing organic compound containing from about 20 to 40 carbon atoms and being selected from the group consisting of

(a) a secondary or tertiary amine having the formula $N(R_1)(R_2)(R_3)$, wherein R_1 is H or an alkyl radical containing from 9 to 18 carbon atoms and R_2 and R_3, which may or may not be the same, are each an alkyl radical containing from 9 to 18 carbon atoms;

(b) an alkylene-bis-fatty acid amide containing at least 26 carbon atoms wherein the alkylene group contains 1 to 5 carbon atoms;

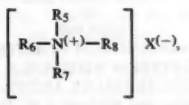
(c) an ammonium compound selected from the group consisting of

(c_i) an alkylpyridinium bromide of the formula



wherein R_4 is an alkyl radical containing at least 15 carbon atoms, or

(c_{ii}) an ammonium compound of the formula



wherein

1. R_5 and R_7 are methyl radicals, R_6 is an alkyl radical containing at least 9 carbon atoms, R_8 is the same as R_6 or is a benzyl radical; and X is Cl or Br; or
2. R_5 and R_7 are methyl radicals, R_6 is a dialkylphenoxy-ethoxyethyl radical; R_8 is a benzyl radical; and X is Cl or Br; or
3. R_5 and R_7 are methyl radicals, R_6 is an alkyl radical containing at least 4 carbon atoms, R_8 is H and X is an alkylsulfate group wherein the alkyl radical contains at least 12 carbon atoms, or

(d) a mixture thereof

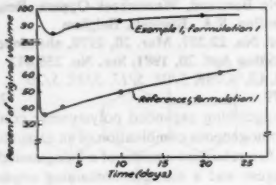
said nitrogen-containing compound being present in an amount between about 0.5 and 50% based on the weight of the fire-retardant agent, said expanded polystyrene having cells, the average size of which is substantially less than the average cell size of a similar expanded polystyrene produced in the absence of such a nitrogen-containing organic compound.

4,359,539

FOAMING SYNTHETIC RESIN COMPOSITIONS STABILIZED WITH CERTAIN HIGHER ETHERS, ESTERS OR ANHYDRIDES

Tsuneo Hoki, and Yutaka Matsuki, both of Suzuka, Japan, assignors to Asahi-Dow Limited, Tokyo, Japan

Division of Ser. No. 241,336, Mar. 6, 1981, Pat. No. 4,327,193.
This application Jan. 22, 1982, Ser. No. 341,940
Claims priority, application Japan, Mar. 10, 1980, 55-29100
Int. Cl.³ C08J 9/14
U.S. Cl. 521—79 3 Claims



1. An extrusion foaming process for expanding an aliphatic olefin polymer which comprises

(1) heating plastifying said olefin polymer;

(2) admixing said heat plastified olefin polymer under conditions of elevated temperature and pressure with a volatile organic blowing agent and with from 0.1 to 10 weight percent based upon said olefin polymer of a compound of the formula I:

$$R_1—X—R_2 \quad (I)$$

wherein R_1 and R_2 represent an aliphatic hydrocarbon group having 3 to 24 carbon atoms, respectively, with at least one thereof having 10 or more carbon atoms, and X represents a radical selected from the group consisting of

$$—\overset{O}{\overset{\|}{C}}—O—,\ —\overset{O}{\overset{\|}{C}}—S—,\ —\overset{O}{\overset{\|}{C}}—O—\overset{O}{\overset{\|}{C}}—,\ —S—\text{ and }—O—;\text{ and}$$

(3) extruding the resultant heat plastified mixture into a zone of lower pressure to thereby produce an aliphatic olefin polymer foam product.

4,359,540

METHOD FOR MAKING RIM ELASTOMERS USING A CATALYST SYSTEM WHICH IS A POLYMER CONTAINING TERTIARY AMINE MOIETIES

Edward E. McEntire, and Richard J. G. Dominquez, both of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed May 29, 1981, Ser. No. 268,220
Int. Cl.³ C08G 18/14
U.S. Cl. 521—129 18 Claims

1. In a method for making a polyurethane elastomer of significantly improved properties wherein an aromatic polyisocyanate, a polyol of above about 500 equivalent weight, a chain extending agent comprising a low molecular weight active hydrogen containing compound of at least 2 functionality and a catalyst system is injected via a RIM machine into a mold cavity of the desired configuration the improvement which comprises using as a component of the catalyst system a polymer made from the monomer

$$CH_2{=}\overset{R_1}{\overset{|}{C}}COYR_{10}$$

where R_{10} is any tertiary amino containing group with a pka in water of 7.5 or greater, R_1 is H or CH_3 and Y is O or NH.

4,359,541

PROCESS FOR THE PREPARATION OF POLYISOCYANURATE DISPERSIONS AND COMPOSITIONS PREPARED THEREFROM

John T. Patton, Jr., Wyandotte; Thirumurti Narayan, and Gerhard G. Ramlow, both of Grosse Ile, all of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Jan. 19, 1981, Ser. No. 225,935
Int. Cl.³ C08G 18/14, 18/75, 18/77
U.S. Cl. 521—137 32 Claims

2. The dispersible polyisocyanate polymer of claim 1 prepared in the presence of an adduct of equivalent quantities of an organic polyisocyanate, and a monofunctional active hydrogen compound.

23. A process for preparing a dispersion of polyisocyanurate polymer in a polyol by (a) polymerizing an organic polyisocyanate in an organic solvent in the presence of an effective amount of a trimerization catalyst, (b) deactivating said polymerization catalyst, (c) reacting the residual free isocyanate with a monofunctional active hydrogen compound or mixtures thereof, (d) mixing the solution with a polyol, and (e) removing the organic solvent.

4,359,542

GRAFT COPOLYMERS FROM UNSATURATED MONOMERS AND AZO DI-ESTER POLYOLS AND POLYURETHANES PREPARED THEREFROM

Kiran B. Chandalia, Hamden, and Frank J. Preston, Meriden, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Continuation of Ser. No. 110,059, Jan. 7, 1980, which is a division of Ser. No. 779,968, Mar. 22, 1977, Pat. No. 4,258,148.
This application Aug. 5, 1981, Ser. No. 290,049
Int. Cl.³ C08G 18/14, 18/16, 18/63; C08L 75/06
U.S. Cl. 521—137 10 Claims

1. In a process for preparing a polyurethane foam from a reaction mixture comprising an organic polyisocyanate, a foaming agent, and a polyol reactant, the improvement characterized by including a polyol reactant which comprises a graft copolymer prepared by polymerizing an ethylenically unsaturated monomer or mixtures of such monomers in the presence of an azo di-ester polyol of the formula:

$$((HO)_m—R_1—O)\overset{O}{\overset{\|}{C}}—(CH_2)_n—\overset{R_2}{\overset{|}{C}}—\overset{|}{CN}$$

$$—N{=}N—\overset{R_3}{\overset{|}{C}}—(CH_2)_p—\overset{O}{\overset{\|}{C}}(O—R_4—(OH)_r)$$
$$\overset{|}{CN}$$

wherein:

m and r independently represent integers from 2 to 5,

n and p independently represent integers from 0 to 5,

R_2 and R_3 independently represent alkyl of 1–4 carbons, and

$((HO)_m—R_1—O)$ and $(O—R_4—(OH)_r)$

independently represent residues of polyether or polyester polyols, $R_1(OH)_{m+1}$ and $R_4(OH)_{r+1}$, having an average equivalent weight ranging from about 250 to 5000, after removal of one hydroxy hydrogen therefrom, wherein R_1 and R_4 independently represent polyether polymer portions and polyester polymer portions thereof,

said polymerizing occurring at a temperature at or above which the azo-carbon linkages of the azo di-ester polyol are ruptured.

4,359,543
WATER-DISPLACING PAINT

Charles R. Hegedus, Warrington, and Kenneth G. Clark, Chalfont, both of Pa., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 30, 1981, Ser. No. 288,598
Int. Cl.³ C09D *3/64, 3/82, 5/08*
U.S. Cl. 523—177 **11 Claims**

1. A water-displacing paint for coating metallic surfaces to prevent corrosion, comprising:

a binder consisting essentially of a silicone alkyd resin having a solids content of about 50 weight percent, a minimum phthalic anhydride content of about 20 weight percent, and a minimum oil content of about 25 weight percent;

solvents including ethyl acetate, aromatic mineral spirits and 1,1,1 trichlorotrifluoroethane;

a corrosion inhibitor consisting essentially of a petroleum sulfonate having a low molecular weight sulfonate;

an adhesion promotor consisting essentially of an organo-titanate of the monalkoxy type, said organo-titanate being isopropyl, tri(N-ethylamino-ethylamino) titanate; and

pigments in sufficient amounts to impart a desired color to the paint.

4,359,544
SYNERGISTIC CO-NUCLEANTS FOR BUTENE-1 POLYMER COMPOSITIONS

Charles C. Hwo, Sugarland, and John A. Martone, Houston, both of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Feb. 1, 1982, Ser. No. 344,285
Int. Cl.³ C08L *23/20, 23/06;* **C08K** *5/20*
U.S. Cl. 524—232 **6 Claims**

1. A method for promoting crystallization from the melt of an isotactic butene-1 homopolymer, isotactic butene-1-propylene copolymer or isotactic butene-1-ethylene copolymer having no more than about 15 mole percent by ethylene, which comprises adding to a composition comprising the homopolymer or copolymer about 0.02 to 5.0% by weight stearamide and about 0.02 to 5.0% by weight high density polyethylene.

4,359,545
FIBER-TREATING COMPOSITIONS COMPRISING TWO ORGANO-FUNCTIONAL POLYSILOXANES

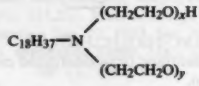
Isao Ona, Sodegaura; Masaru Ozaki, and Yoichiro Taki, both of Ichihara, all of Japan, assignors to Toray Silicone Co., Ltd., Tokyo, Japan

Filed Feb. 3, 1982, Ser. No. 345,298
Claims priority, application Japan, Feb. 5, 1981, 56-16200
Int. Cl.³ C08L *83/04, 83/06;* **C08K** *5/01;* **D06M** *15/66*
U.S. Cl. 524—262 **5 Claims**

1. A cmposition for treating fibers, said composition comprising a carrier liquid, an organopolysiloxane component having the formula

$$A(R_2SiO)_j(RSiO)_k(RGSiO)_zSiR_2A, \quad (A)$$
$$\quad\quad\quad

tration level of about 5 to about 25 grams per 100 ml. of the nonreactive solvent system, wherein the amine terminated polyalkylene oxide of said amine terminated polyalkylene oxide neutralized sulfonated thermoplastic resin is an ethoxylated long-chain fatty acid derived amine having the formula:



wherein x+y=5 to 200.

4,359,548

PROCESS FOR THE PRODUCTION OF POLYESTER RESINS

David H. Blount, 5450 Lea St., San Diego, Calif. 92105

Division of Ser. No. 319,144, Nov. 9, 1981, Pat. No. 4,339,366, which is a continuation-in-part of Ser. No. 207,391, Nov. 17, 1980, Pat. No. 4,336,340, which is a continuation-in-part of Ser. No. 134,975, Mar. 3, 1980, Pat. No. 4,283,311, which is a continuation-in-part of Ser. No. 13,139, Feb. 21, 1979, Pat. No. 4,226,982. This application May 10, 1982, Ser. No. 376,712

Int. Cl.³ C08G *18/00;* **C08K** *3/00*

U.S. Cl. 524—650 **21 Claims**

1. The process for the production of polyurethane resinous products by the following steps:

(a) heating and reacting 10 to 50 parts by weight of a broken-down alkali metal and/or a broken-down alkali metal cellulose polymer produced by mixing 3 parts by weight of a cellulose containing plant or plant derivative with 2 to 5 parts by weight of melted alkali metal hydroxide, then heating the mixture at from 150° C. to 220° C. while agitating for 5 to 60 minutes, with 10 to 50 parts by weight of a substituted organic hydroxy compound which contains at least one substitute which will split off in the reaction, then

(b) adding, heating and reacting 10 to 50 parts by weight of polycarboxylic acid and/or polycarboxylic acid anhydride, thereby producing polyester resinous product, then

(c) adding and reacting 50 parts by weight of an organic polyisocyanate or polyisothiocyanate with 1 to 95 parts by weight of the polyester resinous product, thereby producing

(d) polyurethane resinous product.

4,359,549

POLYURETHANE SEALANT COMPOSITIONS

James A. Gallagher, Grosse Ile, and Bernardas Brizgys, Southgate, both of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Division of Ser. No. 139,929, Apr. 14, 1980, Pat. No. 4,318,838. This application Sep. 23, 1981, Ser. No. 304,730

Int. Cl.³ C08L *75/08*

U.S. Cl. 524—791 **4 Claims**

1. In the process of manufacturing aluminum window and door frames which involves using a substance which acts as a heat barrier, the improvement comprising using a polyurethane sealant composition prepared by

(a) mixing a polyether polyol or polyether polyol blend having a branching density of 400 grams to 700 grams per branching unit with an inorganic filler selected from the group consisting of calcium silicate, aluminum silicate, magnesium silicate, and mixtures thereof, said filler being added in an amount which is from 0.15 part to 0.7 part by weight per part by weight of polyether polyol or polyether polyol blend, and

(b) reacting the mixture made in accordance with paragraph (a) with an organic polyisocyanate such that the ratio of isocyanate groups of the polyisocyanate to the hydroxyl groups of the polyether polyol is 1.0:1 to 1.2:1

as the substance which acts as a heat barrier.

4,359,550

POLYISOCYANURATE POLYMERS, DISPERSIONS, AND CELLULAR AND NON-CELLULAR POLYURETHANE PRODUCTS PREPARED THEREFROM

Thirumurti Narayan; Gerhard G. Ramlow, both of Grosse Ile, and Peter T. Kan, Plymouth, all of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Jan. 19, 1981, Ser. No. 225,934

Int. Cl.³ C08G *18/79;* **C08K** *5/06*

U.S. Cl. 524—871 **18 Claims**

1. A process for preparing a polyisocyanurate polymer dispersion by (a) polymerizing a solution of an organic polyisocyanate in an organic solvent in the presence of an effective amount of a trimerization catalyst, (b) deactivating said catalyst, (c) isolating said polymer from said solvent, and (d) dispersing said polymer in a polyol.

4,359,551

HOT-MELT PRESSURE-SENSITIVE ADHESIVE COMPOSITION CONTAINING AN ACID GRAFTED BLOCK COPOLYMER

Yoshikazu Suda, Tokyo; Haruhisa Nagano, Kawasaki; Shigeyuki Miyata, Yokohama, and Akio Yamori, Kawasaki, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Dec. 18, 1980, Ser. No. 217,984

Claims priority, application Japan, Dec. 26, 1979, 54-168206

Int. Cl.³ C08L *53/02, 51/00*

U.S. Cl. 524—271 **15 Claims**

1. A hot-melt pressure-sensitive adhesive composition comprising:

(a) 100 parts by weight of a grafted block copolymer material formed by the graft reaction of at least one block copolymer with at least one unsaturated carboxylic acid monomer and/or derivative monomer thereof in an amount of 0.01 to 30% by weight based on the total of said at least one block copolymer and said at least one monomer, said at least one block copolymer being represented by the following formula:

$$A—B—A,\ (A—B)_n,\ B—A—B)_n,\ (A—B)_nA \text{ or } (A—B)_mX$$

wherein B stands for a block consisting essentially of butadiene or isoprene monomer units, A stands for a block consisting essentially of styrene monomer units, n is an integer of from 2 to 10, X is the residue of a polyfunctional coupling agent to which m of (A—B) are bonded and m is an integer of from 2 to 7,

having a melt flow index of 0.1 to 40 g/10 minutes as measured in accordance with ASTM D 1238 (Condition G), and containing 5 to 50% by weight of styrene monomer units; and

(b) 50 to 250 parts by weight of a tackifier mixture consisting of a tackifier S and a tackifier L and having an S/L mixing weight ratio of 9/1 to 3/7, said tackifier S being at least one terpene resin having a softening point of 60° C. or more or a mixture of 50% by weight or more of at least one terpene resin having a softening point of 60° C. or more and less than 50% by weight of at least one other resin having a softening point of 60° C. or more and selected from rosin and derivatives thereof, petroleum resins and styrene resins, and said tackifier L being at least one terpene resin having a softening point of 30° C. or less or a mixture of 50% by weight or more of at least one terpene resin having a softening point of 30° C. or less and at least one other resin having a softening point of 30° C. or less and selected from rosin derivatives, petroleum resins and styrene resins.

4,359,552

HOT MELT ADHESIVE COMPOSITIONS CONTAINING AN ALIPHATIC HYDROCARBON RESIN

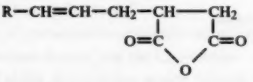
Vikramkumar Acharya, and Pallavoor R. Lakshmanan, both of Houston, Tex., assignors to Gulf Oil Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 229,394, Jan. 29, 1981, abandoned, which is a continuation-in-part of Ser. No. 174,296, Jul. 31, 1980, abandoned. This application Aug. 10, 1981, Ser. No. 291,198

Int. Cl.³ C08F *8/30;* **C08K** *5/01;* **C08L** *91/06*

U.S. Cl. 525—193 **9 Claims**

1. A hot melt adhesive composition consisting essentially of:
(a) 10–30 weight % of an alkenyl succinic anhydride,
(b) 20–60 weight % of an ethylene copolymer, and
(c) 10–40 weight % of a tackifying resin;
said alkenyl succinic anhydride having the structure:



where R is an alkyl group containing at least about 15 carbon atoms; said ethylene copolymer having polymerized therein at least 40 weight % polymerized ethylene and the balance one or more polymerized monomers from the group consisting of vinyl acetate, acrylic and methacrylic acid and alkyl esters of acrylic and methacrylic acid; and said tackifying resin being an aliphatic hydrocarbon resin having a Ring and Ball softening point of about 10°–135° C.

4,359,553

POLYETHYLENE EXTRUSION COATING COMPOSITIONS

Ray Edwards, Henderson, Tex., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 14, 1981, Ser. No. 301,920

Int. Cl.³ C08L *23/06, 23/12, 23/16*

U.S. Cl. 525—240 **18 Claims**

1. An extrusion coating composition having a melt index of 2 to 20 dg/min. at 190° C. which provides coatings on substrates having broad heat seal range comprising a blend of: (1) about 5 to 30 percent, by weight, of at least one degraded crystalline polypropylene or ethylene/propylene copolymer containing less than 5 weight percent ethylene, having a melt flow rate of 5 to 55 dg/min. at 230° C., and (2) about 95 to 70 percent, by weight, of at least one polyethylene having a density of 0.916 to 0.920, a melt index at 190° C. of 10 to 20, and a melt index recovery of greater than 50.

4,359,554

POWDER PAINT WITH EPOXY AND HYDROXY COPOLYMER AND DICARBOXYLIC ACIDS

Santokh S. Labana, Dearborn Heights, and Ares N. Theodore, Farmington, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Continuation-in-part of Ser. No. 394,874, Sep. 6, 1973, abandoned. This application Feb. 24, 1975, Ser. No. 552,676

The portion of the term of this patent subsequent to Jan. 13, 1993, has been disclaimed.

Int. Cl.³ C08F *8/46*

U.S. Cl. 525—386 **12 Claims**

1. In a thermosetting powder paint which exclusive of pigments, catalysts, antistatic agents, plasticizers, and flow control agents, the same being conventional non-reactive additives to a thermoset powder paint, consists essentially of a coreactable particulate mixture of

(A) a copolymer consisting essentially of about 5 to about 20 weight percent of a glycidyl ester of an unsaturated acid and about 80 to about 95 weight percent of other monoethylenically unsaturated monomers, and having a glass transition temperature in the range of about 40° C. to about 90° C. and a molecular weight (M_n) in the range of about 1500 to about 15,000 and

(B) a C_4–C_{20} saturated, straight chain, aliphatic, dicarboxylic acid in the amount of about 0.8 to about 1.1 carboxyl groups for each functional group on said copolymer,

the improvement wherein said copolymer is qualitatively difunctional and said other monoethylenically unsaturated monomers consist essentially of difunctional monomers selected from the group consisting of C_5–C_7 hydroxyalkyl acrylates and C_5–C_7 hydroxyalkyl methacrylates in an amount comprising about 2 to about 10 weight percent of said copolymer and monoethylenically unsaturated monomers consisting essentially of monofunctional monomers selected from the group consisting of esters of a C_1–C_8 monohydric alcohol and acrylic acid, esters of a C_1–C_8 monohydric alcohol and methacrylic acid and C_8–C_{12} monovinyl hydrocarbons.

4,359,555

SALTS FORMED FROM FORMAMIDINES WITH POLYMERS CONTAINING SULFONIC ACID GROUPS

Christian d'Hondt, Riehen; Dieter Lohmann, Muttenz, and Ernst Neuenschwander, Riehen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

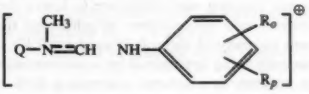
Filed Jun. 18, 1980, Ser. No. 160,529

Claims priority, application Switzerland, Jun. 29, 1979, 6095/79; May 23, 1980, 4053/80

Int. Cl.³ C08F *8/32, 8/30*

U.S. Cl. 525—358 **6 Claims**

1. A salt of an anionic polymer selected from the group consisting of polystyrenesulfonic acid, copolymers of polystyrenesulfonic acid, polyvinylsulfonic acid and poly-[N-(sulfoalkyl)acrylamide] wherein the cation of said salt is of the formula



in which Q is hydrogen, alkyl of 1 to 4 carbon atoms, phenyl, or phenyl substituted with alkyl of 1 to 4 carbon atoms or halo, and each of R_o and R_p is hydrogen, halo or alkyl of 1 to 4 carbon atoms.

4,359,556

THERMOPLASTIC POLYAMIDE HOT MELT ADHESIVE COMPOSITION

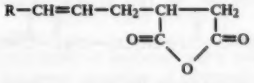
Pallavoor R. Lakshmanan, Houston, Tex., and Benedict J. Monachino, Chatham, N.J., assignors to Gulf Oil Corporation, Pittsburgh, Pa.

Filed Jun. 5, 1981, Ser. No. 271,741

Int. Cl.³ C08L *77/00*

U.S. Cl. 525—420.5 **5 Claims**

1. A hot melt adhesive composition consisting essentially of:
(a) 40–98 weight percent of a thermoplastic polyamide resin derived from dimer acid and a low molecular weight aliphatic diamine, and
(b) 2–60 weight percent of an alkenyl succinic anhydride; said alkenyl succinic anhydride having the structure:

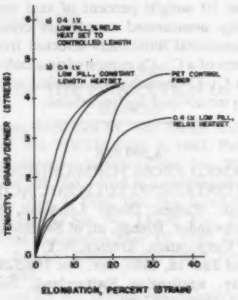


where R is an alkyl group containing about 15–49 carbon atoms; said polyamide resin having a molecular weight in the range of about 2,000 to 20,000 and a Ring and Ball softening point in the range of about 85° C. to 200° C.

4,359,557
PROCESS FOR PRODUCING LOW PILLING TEXTILE FIBER AND PRODUCT OF THE PROCESS

Kenneth R. Watkins, and Leron R. Dean, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 186,103, Sep. 11, 1980, abandoned. This application Mar. 16, 1981, Ser. No. 244,365
Int. Cl.³ C08G *63/46*
U.S. Cl. 525—437 16 Claims



1. A process for manufacturing polyethylene terephthalate fibers having improved low-pilling properties which comprise

admixing in the feed throat of an extruder polyethylene terephthalate discrete solid polymer materials having an inherent viscosity of about 0.56 to about 0.60 with about 0.25% by weight ethylene glycol to form an admixture;

melting in said extruder said solid polymer materials into a liquid and reacting said admixture to lower the inherent viscosity of said polyethylene terephthalate fibers to an inherent viscosity of about 0.39 to about 0.43, said inherent viscosity being determined by a concentration of 0.5% of the polymer in a solvent comprising 60% by weight phenol and 40% by weight tetrachloroethane, the polymer being dissolved at 125° C. and being measured at 25° C.;

extruding the admixture into fibers;

drafting the fibers; and

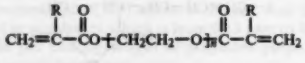
heatsetting the fibers at a constant length.

4,359,558
POLYURETHANE DIACRYLATE COMPOSITIONS

Francis E. Gould, Princeton, and Christian W. Johnston, Neshanic Station, both of N.J., assignors to Tyndale Plains-Hunter, Ltd., Princeton, N.J.

Filed Nov. 12, 1980, Ser. No. 206,407
Int. Cl.³ C08G *18/14, 18/30*
U.S. Cl. 525—454 15 Claims

1. A hydrophilic polyurethane diacrylate composition which will form a hydrogel upon immersion in water; is permeable to gases, ions and other low molecular weight species; is dimensionally stable and exhibits memory; obtained by the reaction of from about 5 to about 70 weight percent of a diacrylate having the formula:



wherein R is selected from the group consisting of hydrogen and the methyl radical and n is a whole number, such that the average molecular weight of said diacrylate is no greater than 1588; in the presence of from about 95 to about 30 weight percent of a hydrophilic polyurethane resin.

4,359,559
NOVEL POLYMETALLOCARBOSILANE, AND PROCESS FOR ITS PRODUCTION

Seishi Yajima; Kiyohito Okamura; Yoshio Hasegawa, and Takemi Yamamura, all of Oharai, Japan, assignors to UBE Industries, Ltd., Yamaguchi, Japan

Filed Nov. 20, 1980, Ser. No. 208,744
Claims priority, application Japan, Nov. 21, 1979, 54/149977; Dec. 27, 1979, 54/169443
Int. Cl.³ C08F *283/00*
U.S. Cl. 525—475 6 Claims

1. A polymetallocarbosilane having a number average molecular weight of 700 to 100,000 derived from a polycarbosilane having a number of average molecular weight of 200 to 10,000 and containing a main-chain skeleton represented mainly by the general formula

wherein R represents a hydrogen atom, a lower alkyl group or a phenyl group,

and an organometallic compound represented by the general formula

wherein M represents Ti or Zr, and X represents an alkoxy group having 1 to 20 carbon atoms, a phenoxy group or an acetylacetoxy group,

at least one of the silicon atoms of the polymetallocarbosilane being bonded to the metal atom (M) through an oxygen atom, the ratio of the total number of the structural units —Si—CH_2— to the total number of the structural units —M—O— in the polymetallocarbosilane being in the range of from 2:1 to 200:1.

4,359,560
METHOD FOR REDUCING WALL FOULING IN VINYL CHLORIDE POLYMERIZATION

Bernard D. Bauman, Plymouth Meeting, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Jun. 13, 1978, Ser. No. 915,090
Int. Cl.³ C08F *2/18*
U.S. Cl. 526—74 5 Claims

1. In a suspension polymerication process wherein a recipe comprising vinyl chloride or a mixture of vinyl chloride and another vinyl monomer, water, a suspension agent, and a monomer soluble polymerization catalyst is charged to a stainless steel reactor at an intial pH above 6.0 and subsequently polymerized at an elevated temperature to produce a vinyl chloride containing polymer, the improvement for reducing wall fouling in said stainless steel reactor, which comprises:

wetting the internal reactor surface with a solution comprising from about 10–50% by weight of an alkali metal hydroxide; and

heating the wet reactor surface to a temperature from 40°–100° C. for a period of at least 5 minutes prior to charging the recipe to the reactor.

4,359,561

HIGH TEAR STRENGTH POLYMERS

William A. Fraser, Princeton; Norma J. Maraschin, Somerset; Frederick J. Karol, Belle Mead, all of N.J., and Alexander J. Makai, Charleston, W. Va., assignors to Union Carbide Corporation, Danbury, Conn.

Continuation of Ser. No. 49,555, Jun. 18, 1979, abandoned. This application Mar. 23, 1981, Ser. No. 246,914

Int. Cl.³ C08F *2/34, 4/02, 4/52*

U.S. Cl. 526—88 30 Claims

1. A continuous process for making, in the gas phase and at a level of productivity of at least 700 pounds of polymer per pound of total catalyst, heterogeneous ethylene based hydrocarbon polymers having, in film form, high Elmendorf tear strength values which comprises interpolymerizing ethylene with C_a and C_b monomers maintained throughout the process in the molar ratios in said gas phase of C_a/C_2 of about 0.1 to 0.9 and C_b/C_2 of about 0.015 to 0.2

wherein the C_a monomer is selected from propylene, butene-1 and mixtures thereof and the C_b monomer is one or more C_5 to C_8 alpha monoolefins which contain no branching closer than the fourth carbon atom,

in a reaction zone having a pressure of about 50 to 1000 psi and a temperature of about 65° to 105° C., with an activated catalyst formed from an activator compound and a precursor compound,

said activator compound having the structure

$$Al(R'')_cX'_dH_e$$

wherein X' is Cl or OR''', R'' and R''' are the same or different and are C_1 to C_{14} saturated hydrocarbon radicals, d is 0 to 1.5, e is 1 or 0 and c+d+e=3, said precursor compound having the formula

$$Mg_mTi_l(OR)_nX_p(ED)_q$$

wherein

ED is an electron donor compound which is an organic compound which is liquid at 25° C. at atmospheric pressure, and in which the titanium compound and magnesium compound used to form said precursor compound are partially or completely soluble,

m is ≧0.5 to ≦56

n is 0, 1 or 2

p is ≧2 to ≦116

q is ≧2 to ≦85

R is a C_1 to C_{14} aliphatic or aromatic hydrocarbon radical or COR' wherein R' is a C_1 to C_{14} aliphatic or aromatic hydrocarbon radical,

X is selected from the group consisting of Cl, Br, I and mixtures thereof, and

said precursor compound being impregnated in porous carrier material so as to provide a weight ratio of about 0.033 to 0.33 parts of precursor compound to one part of said carrier material, and said precursor compound being either

completely activated in one step outside of said reaction zone in the absence of solvent, or

is first partially activated outside of said reaction zone in the presence or absence of solvent and then completely activated inside of said reaction zone.

4,359,562

PROCESS FOR PRODUCING ETHYLENE POLYMERS AND COPOLYMERS BY MEANS OF A SUPPORTED CATALYST OF A CHROMIUM-HYDROCARBON COMPLEX ON AN INORGANIC OXIDE CARRIER

Dieter Stein, Limburgerhof; Robert Bachl, Worms, and Konrad Richter, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 17, 1981, Ser. No. 284,380

Claims priority, application Fed. Rep. of Germany, Aug. 8, 1980, 3030055

Int. Cl.³ C08F *4/78*

U.S. Cl. 526—129 1 Claim

1. A process for the preparation of ethylene homopolymers and ethylene copolymers with minor amounts of C_3–C_6-α-monoolefins by polymerizing the monomer or monomers at from 30° to 200° C. under a pressure of from 0.1 to 200 bars, by means of a supported catalyst (1) which contains a chromium-hydrocarbon complex (1.2) on an inorganic oxide carrier (1.1), wherein

(1) a supported catalyst is employed, which contains (1.1) on a finely divided, porous, inorganic oxide carrier, having a particle diameter of from 1 to 1,000 μm, a pore volume of from 0.3 to 3 cm^3/g and a surface area of from 100 to 1,000 m^2/g and which has the formula $SiO_2.aAl_2O_3$, where a is a number from 0 to 2, (1.2) a chromium-hydrocarbon complex of the formula

RCrACrR

where R is a cyclic and/or open-chain hydrocarbon or hydrocarbon radical which contains 2n and 2n+1 carbon atoms respectively and from 1 to n non-cumulated double bonds, n being an integer from 2 to 10, Cr is chromium and A is cyclooctatetraene or a divalent n-octatetraene radical, which is unsubstituted or in which up to 8 hydrogen atoms of the cyclooctatetraene or n-octatetraene radical can be substituted by C_1–C_4-alkyl,

(2) with or without a co-catalyst of the formula

$$\begin{array}{c} X-Al-R' \\ \quad | \\ \quad Y \end{array}$$

where X is chlorine, hydrogen, R' or OR', Y is R' and OR' and R' is C_1–C_{18}-alkyl, with the provisos that (i) the supported catalyst (1) contains from 0.01 to 10% by weight, calculated as chromium and based on carrier (1.1), of the complex compound (1.2) and (ii) that, where the co-catalyst is present, the atomic ratio of chromium in the supported catalyst (1) to aluminum in the co-catalyst (2) is up to 1:1,000.

4,359,563

PREPARATION OF ACETYLENE COPOLYMERS

Herbert Naarmann, Wattenheim; Klaus Penzien, Frankenthal, both of Fed. Rep. of Germany, and Heinz G. Viehe, Louvain-la Neuve, Belgium, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Division of Ser. No. 174,107, Jul. 31, 1980, abandoned. This application May 19, 1981, Ser. No. 265,077

Int. Cl.³ C08F *238/02*

U.S. Cl. 526—250 8 Claims

1. A solid copolymer of acetylene and a heteroalkyne selected from the group consisting of chloro-ethyne, bromoethyne, fluoro-ethyne, trifluoro-methyl-ethyne, 2-propynenitrile, and 3-(methylthio)-propyne-1, said copolymer being produced by polymerizing a monomer mixture of acetylene and the heteroalkyne in the presence of a Ziegler catalyst.

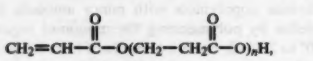
4,359,564

ADDITION POLYMER OF OLIGOMERIC POLYESTERS OF ACRYLIC ACID

Richard F. Merritt, Fort Washington, and Bjorn E. Larsson, Rushland, both of Pa., assignors to Rohm & Haas Co., Philadelphia, Pa.

Filed Mar. 14, 1980, Ser. No. 130,323
Int. Cl.³ C08F 20/04
U.S. Cl. 526—260 10 Claims

1. In a method of preparing a free-radical addition polymer comprising polymerizing one or more ethylenically unsaturated monomers by solution or emulsion polymerization, the improvement wherein a monomer of the formula



in which the average value of n (n) is in the range from greater than 1 to about 10, is polymerized, optionally with one or more comonomers; less than 5%, by weight, of the comonomers being polyunsaturated.

4,359,565

VINYLSILICONE PASTES FOR DENTAL IMPRESSION

Lothar Puppe; Reiner Voigt, both of Leverkusen; Manfred Borgardt, Wuppertal; Hans-Heinrich Moretto, Cologne, and Bernard Munchenbach, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 29, 1981, Ser. No. 288,076
Claims priority, application Fed. Rep. of Germany, Aug. 23, 1980, 3031894
Int. Cl.³ C08G 77/06
U.S. Cl. 528—15 5 Claims

1. In a polysiloxane-based dental composition which cross-links by an addition reaction and hardens at room temperature, the composition comprising

(a) an organopolysiloxane with at least two vinyl groups in the molecule,

(b) an organohydridopolysiloxane,

(c) a catalyst to accelerate the addition reaction, and

(d) a hydrophobic filler, the improvement which comprises including therein

(e) an aluminosilicate containing finely divided palladium.

4,359,566

SILICONE-EPOXY COATING COMPOSITIONS

Gary E. LeGrow, Madison, and Robert E. Kalinowski, Auburn, both of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Continuation-in-part of Ser. No. 225,218, Jan. 15, 1981, abandoned. This application Dec. 7, 1981, Ser. No. 328,328
Int. Cl.³ C08G 77/06
U.S. Cl. 528—16 8 Claims

1. A composition of matter suitable for spray coating consisting essentially of (1) 50 to 80 percent by weight of a cycloaliphatic epoxy resin or a bisphenol A epoxy resin, (2) from 6 to 25 percent by weight of an alkoxylated siloxane copolymer of monophenylsiloxane and dimethylsiloxane units in a mol ratio of from 2:1 to 1.9:1, (2) containing from 10 to 20 percent by weight silicon-bonded alkoxy groups having 1 to 2 carbon atoms, (3) from 0 to 40 percent by weight phenyltrimethoxysilane or phenyltriethoxysilane and (4) from 0.04 to 1.2 percent by weight of an aluminum chelate of a beta-dicarbonyl compound.

4,359,567

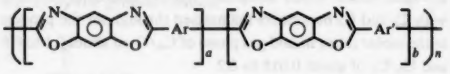
THERMOOXIDATIVELY STABLE ARTICULATED P-BENZOBISOXAZOLE AND P-BENZOBISTHIAZOLE POLYMERS

Robert C. Evers, Dayton, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

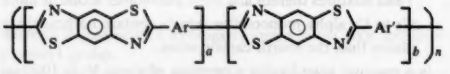
Filed Oct. 2, 1981, Ser. No. 307,991
Int. Cl.³ C08G 73/22, 75/32
U.S. Cl. 528—179 6 Claims

1. A thermooxidatively stable articulated polymer consisting essentially of recurring units having one of the following formulae:

Formula I



Formula II



wherein Ar is a phenylene radical, Ar' is selected from the group consisting of biphenylene and bipyridylene radicals, and wherein the molar proportion of a ranges from about 0.80 to 0.97, b ranges from about 0.03 to 0.20, and the sum of a and b equals one.

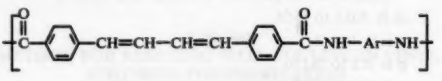
4,359,568

POLYAROMATIC AMIDES CONTAINING 1,3-BUTADIENE UNITS

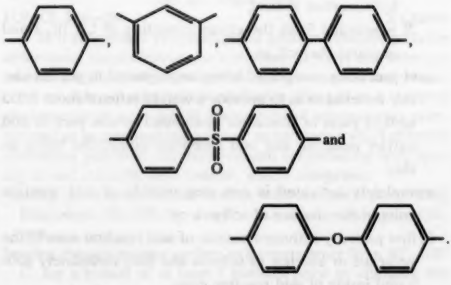
Carl S. Marvel, Tucson, Ariz., and Venkatesa Sankaran, Wilmington, Del., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 20, 1981, Ser. No. 265,719
Int. Cl.³ C08G 69/32
U.S. Cl. 528—183 12 Claims

1. A resinous, polyaromatic amide having 1,3-butadiene groups as integral units of the polymer chain and consisting essentially of recurring units having the following structural formula:



wherein Ar is a radical selected from the group consisting of



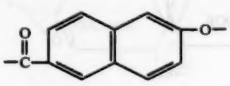
4,359,569

AROMATIC POLYESTER AND FILAMENTS

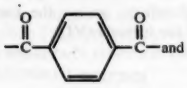
Roger K. Siemionko, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

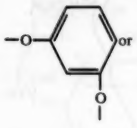
Continuation-in-part of Ser. No. 198,206, Oct. 17, 1980, abandoned. This application Jul. 2, 1981, Ser. No. 280,129
Int. Cl.³ C08G 63/60
U.S. Cl. 528—190 6 Claims

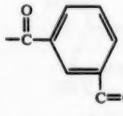
1. Melt-spinnable polyesters of fiber-forming molecular weight consisting essentially of units having the structural formulas:


I

II


III


IV


V

in the proportions of about 20 to 30 mol % of unit I, about 20 to 40 mol % of unit II, about 20 to 40 mol % of unit III and from 5 to about 20 mol % of units IV or V, the dioxy and dicarbonyl units being present in substantially equimolar amounts.

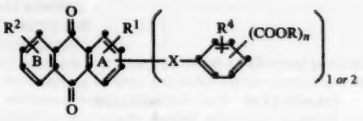
4,359,570

COLORED POLYESTER CONTAINING COPOLYMERIZED DYES AS COLORANTS

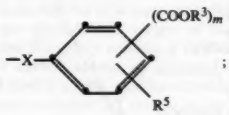
Thomas G. Davis, and Max A. Weaver, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 265,524, May 20, 1981, abandoned, which is a continuation-in-part of Ser. No. 147,978, May 8, 1980, abandoned. This application Oct. 26, 1981, Ser. No. 315,105
Int. Cl.³ C08G 69/44
U.S. Cl. 528—289 7 Claims

1. Colored polyester composition comprising a linear thermoplastic or unsaturated cross-linkable polyester containing a coloring amount of a dye component comprising the copolymerized residue of one or more dyes of the formula



wherein either or both of rings A and B may contain in any position thereon one or two groups of the formula



R and R^3 each is hydrogen, lower alkyl or hydroxy substituted lower alkyl; R^1, R^2, R^4 and R^5 each represents hydrogen or 1–3 substituents selected from lower alkyl, lower alkyl substituted with lower alkoxy, phenyl, Cl, Br, or lower alkanoylamino, lower alkoxy, lower alkoxy substituted with lower alkoxy, phenyl, Cl, Br, or lower alkanoylamino, chlorine, bromine, amino, lower alkylamino, lower alkylamino substituted with lower alkoxy, cyclohexyl, phenyl, Cl, Br, or lower alkanoylamino, arylamino, arylthio, aroylamino, lower alkylsulfonyl, lower alkylthio, lower alkanoylamino, and cyclohexylamino, wherein each aforesaid aryl moiety is 6–10 carbons; X is —S— or —NH—; n is 1 or 2; m is 0, 1, or 2; and wherein from about 5 to about 200 parts of copper phthalocyanine is admixed therewith, said parts being per million parts of polyester.

4,359,571

PROCESS FOR PREPARING GRAFT POLYMER DISPERSIONS AND POLYURETHANES PREPARED THEREFROM

William A. Bernstein, Dearborn Heights; John E. Davis, Woodhaven, and Joseph R. Gregoria, Jr., Southgate, all of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Sep. 2, 1981, Ser. No. 298,454
Int. Cl.³ C08G 67/02
U.S. Cl. 528—392 7 Claims

1. In the process for the preparation of a graft polyol dispersion bythe in situ free radical polymerization of an ethylenically unsaturated monomer or monomers, selected from the group consisting of acrylonitrile, styrene and mixtures thereof, in the presence of a free radical initiator, in a polyol, the improvement comprising conducting said polymerization under such conditions that none of the evaporated monomer or monomers is returned to the dispersion wherein said polymerization is conducted at temperatures between 80° C. and 180° C.

4,359,572

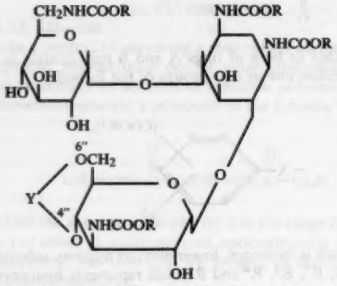
PROCESS FOR THE PRODUCTION OF 3'-DEOXYKANAMYCIN A AND INTERMEDIATE PRODUCT

Hamao Umezawa; Sumio Umezawa; Shunzo Fukatsu, all of Tokyo, and Toshio Yoneta, Yokohama, all of Japan, assignors to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai, Tokyo, Japan

Filed Apr. 21, 1981, Ser. No. 256,131
Claims priority, application Japan, May 25, 1980, 55-54277
Int. Cl.³ A61K 31/71; C07H 15/22
U.S. Cl. 536—13.8 3 Claims

1. A process for the production of 3'-deoxykanamycin A, which comprises the consecutive steps of:

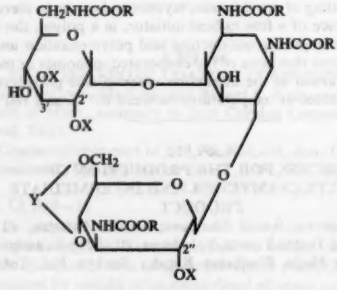
reacting a tetra-N-protected, 4'',6''-O-protected kanamycin A derivative of the formula (IV)



(IV)

wherein R represents an alkyl, aralkyl or aryl group, and Y represents an alkylidene or arylidene group of the formula

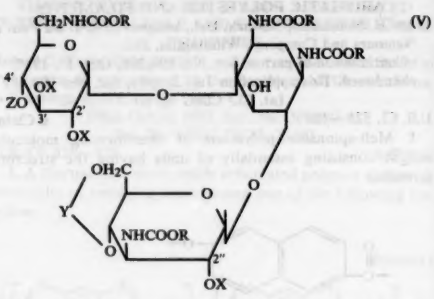
where P and P' are each a hydrogen atom, an alkyl or aryl group, or Y is a cycloalkylidene or tetrahydropyranilidene group, with an alkanoic acid chloride having 2–4 carbon atoms or benzoyl chloride in pyridine below 5° C. to form the 2',3',2''-tri-O-acylated derivative of the formula (II)



(II)

wherein R and Y are as defined above and X is the alkanoyl group having 2–4 carbon atoms or benzoyl group,

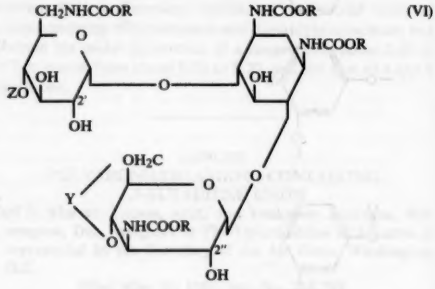
reacting the compound of the formula (II) with 3',4'-dihydro-2H-pyran or 5,6-dihydro-4-methoxy-2H-pyran in a solvent in the presence of a catalytic amount of p-toluenesulfonic acid at 15°–25° C. to form the 4'-O-pyranylated derivative of the formula (V)



(V)

wherein R, X and Y are as defined above and Z represents a pyranyl group,

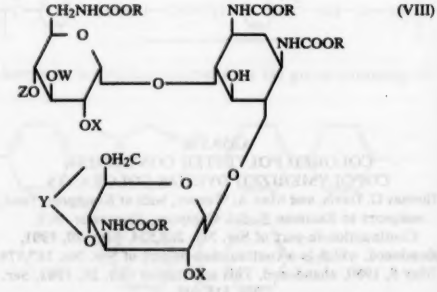
reacting the 4'-O-pyranylated compound of the formula (V) in solution in a (C_1–C_4) alkanol with sodium or potassium methoxide or ethoxide at 15°–25° C. to remove the 2'-, 3'- and 2''-acyl group (X) therefrom, giving the partially deprotected compound of the formula (VI)



(VI)

wherein R, Y and Z are as defined above,

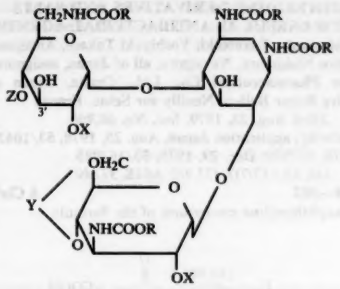
reacting the deprotected compound of the formula (VI) with an alkanoyl chloride of 2–4 carbon atoms or benzoyl chloride at a temperature lower than room temperature to selectively acylate the 2'- and 2''-hydroxyl groups, giving the 3'-O-unprotected, 2',2''-di-O-acyl derivative of the formula (VII)



(VIII)

wherein R, Y and Z are as defined above and X represents the alkanoyl of 2–4 carbon atoms or benzoyl group,

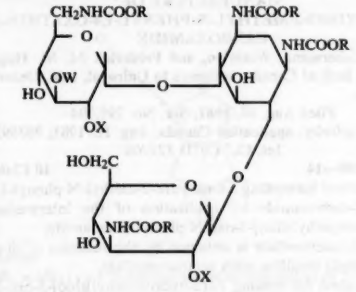
reacting the compound of the formula (VII) with mesyl chloride, tosyl chloride or benzylsulfonyl chloride in pyridine at 50°–80° C. to form the 3'-O-sulfonylated derivative of the formula (VIII)



(VII)

wherein R, X and Z are as defined above and W represents a mesyl, tosyl or benzylsulfonyl group,

reacting the compound of the formula (VIII) with acetic acid, trifluoroacetic acid or hydrochloric acid in a (C_1–C_4) alkanol at 20°–50° C. to remove the 4'-hydroxyl-protecting group (Z) and the 4'',6''-O-hydroxyl-protecting group (Y) therefrom, giving the 2',2''-di-O-acyl-3'-O-sulfonyl-tetra-N-protected kanamycin A derivative of the formula (I)



(I)

wherein R, X and W are as defined above,

reacting the protected kanamycin A derivative of the formula (I) with an alkali metal alcoholate in a (C_1–C_4) alkanol at 15°–30° C. to effect 2',3'- and 3',4'-epoxidations and simultaneously removal of the 2'- and 2''-acyl groups (X) therefrom,

reducing the resultant anhydro derivatives as formed in solution in said alkanol with hydrogen in the presence of a hydrogenation catalyst or with sodium borohydride to afford the corresponding N-protected 3'-deoxy kanamycin A, and

then removing the residual amino-protecting groups (where present) to give the desired 3'-deoxykanamycin A.

3. 2',2''-Di-O-benzoyl-3'-O-mesyl-tetra-N-ethoxycarbonylkanamycin A.

4,359,573

METHYL GLUCOSIDE-AMINE-BASED POLYETHER POLYOLS AND PROCESS OF PREPARATION

Stephen Fuzesi, Hamden, and John G. Bayusik, Wallingford, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Dec. 22, 1980, Ser. No. 218,871
Int. Cl.³ C07H *15/08*
U.S. Cl. 536—17.2 **21 Claims**

1. A process for preparing a polyether polyol which comprises:

a. forming a crude methyl glucoside reaction product by reacting in the presence of a catalytic proportion of an acid catalyst,
(1) starch and
(2) methanol,
said reaction being carried out at an elevated pressure and by reacting at least a stoichiometric proportion of said methanol with said starch, and

b. admixing said crude methyl glucoside reaction product with an amine in the presence of a basic catalyst, maintaining said mixture at a temperature of from 100° to 165° C., and introducing into said mixture an alkylene oxide having between 2 and about 6 carbon atoms, said amine being employed in an amount of at least about 0.1 mole to about 10 moles per glucose unit weight of starch and being selected from the group consisting of an aliphatic amine having 1–8 carbon atoms, an aromatic primary amine having 6–8 carbon atoms, an alkanolamine in which each alkanol group contains 2–5 carbon atoms, and a mixture thereof.

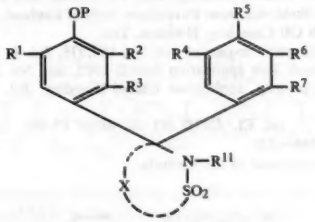
4,359,574

THIAZINE-1,1-DIOXIDE AND ISOTHIAZOLE-1,1-DIOXIDE DERIVATIVES

Stanley M. Bloom, Waban; Alan L. Borror, Lexington, and James W. Foley, Andover, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 836,010, Sep. 23, 1977, abandoned. This application Aug. 4, 1980, Ser. No. 175,291
Int. Cl.³ C07D *275/04, 279/08*
U.S. Cl. 544—135 **47 Claims**

1. A compound of the formula



wherein P is a protecting group, R^1 and R^2 each are selected from hydrogen, alkyl, alkoxy, chloro and fluoro; R^3 is hydrogen, alkyl, alkoxy, or —OP; R^2 and R^3 taken together represent the carbon atoms necessary to complete a fused benzene ring; R^4 and R^6 each are selected from hydrogen, alkyl, alkoxy, chloro and fluoro; R^5 is hydrogen, alkyl, alkoxy, —OP^I wherein P^I is a protecting group, —N,N-(dialkyl)amino, —N,N-(w-R^8alkyl)$_2$amino wherein R^8 is halo or —OP^{II} wherein P^{II} is a protecting group, —$NHCOCH_3$, piperidino, pyrrolidino, N-methylpiperazino, morpholino, thiomorpholino or tetrahydro-2H,4H-1,3,6-dioxazocino; R^7 is hydrogen, alkyl, alkoxy or —OP^{III} wherein P^{III} is a protecting group the same as P^I or P^{II}; R^6 and R^7 taken together represent the carbon atoms necessary to complete a fused benzene ring; R^4, R^5 and R^6 taken together represent the atoms necessary to complete a fused [ij]quinolizidine ring; X represents the atoms necessary to complete 2,3-dihydrobenz[d]isothiazole-1,1-dioxide or 2,3-dihydronaphtho[1,8-de]-1,2-thiazine-1,1-dioxide and R^{11} is

wherein R^9 is selected from methyl, methyl substituted with at least one halo group selected from chloro, bromo and fluoro, alkoxy having 1 to 4 carbon atoms, phenyl, phenyl substituted in the para position with alkyl having 1 to 4 carbon atoms or —N,N-(dialkyl)amino, phenyl substituted with at least one

electron-withdrawing group, phenoxy, phenoxy substituted with at least one electron-withdrawing group, $-O(CH_2)_2Y$ wherein Y is an electron-withdrawing group and phenyl substituted in the ortho position with $-CH_2R^{10}$ wherein R^{10} is chloro or bromo.

4,359,575

PROCESS FOR TRIMERIZING ISOCYANIC ACID TO MAKE CYANURIC ACID

Ronald A. Sills, Cherry Hill, N.J.; Daniel S. Katz, and Balwant Singh, both of Stamford, Conn., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 128,000, Mar. 5, 1980, abandoned, which is a continuation-in-part of Ser. No. 58,219, Jul. 16, 1979, abandoned. This application May 21, 1981, Ser. No. 265,743

Int. Cl.³ C07D *251/32*

U.S. Cl. 544—192 **15 Claims**

1. A process of making cyanuric acid which comprises adding isocyanic acid to a liquid organic solvent for isocyanic acid in which solvent said isocyanic acid when absorbed will undergo trimerization reaction to produce cyanuric acid which will precipitate from said solvent, said liquid organic solvent being a polar solvent having dielectric constant greater than 5.

4,359,576

N-PYRAZINYL-N-BENZYLCARBAMATES, HAVING FUNGICIDAL AND PLANT GROWTH REGULATING PROPERTIES

Pieter Ten Haken, Eastling, near Faversham, and Shirley B. Webb, Sheldwich, near Faversham, both of England, assignors to Shell Oil Company, Houston, Tex.

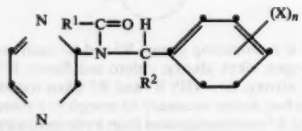
Continuation-in-part of Ser. No. 164,975, Jul. 1, 1980, abandoned. This application Jun. 2, 1981, Ser. No. 269,174

Claims priority, application United Kingdom, Jul. 19, 1979, 7925164

Int. Cl.³ C07D *241/20*; A01N *43/60*

U.S. Cl. 544—336 **2 Claims**

1. A compound of the formula



wherein R^1 is hydrogen, or is alkyl, alkoxyalkyl, cycloalkyl or alkylcycloalkyl of up to six carbon atoms, R^2 is hydrogen or alkyl of one to four carbon atoms, X is halogen or alkyl of from one to six carbon atoms and n is one or two, the horticulturally acceptable acid addition salts thereof, N-oxides thereof and complexes thereof with halides of calcium, copper and iron.

4,359,577

NON-PYROPHORIC NIGROSINE BASE

Albrecht H. Granzow, Somerset, and Erwin Klingsberg, Mountainside, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Apr. 4, 1980, Ser. No. 137,198

Int. Cl.³ C09B *57/00*

U.S. Cl. 544—348 **5 Claims**

1. A method of preparing non-pyrophoric nigrosine base comprising aerating pyrophoric nigrosine base in aniline with an oxygen-containing gas at a temperature of about 20°–150° C. for a period of about 4 to 30 hours with agitation.

5. The product produced by the process of claims 1, 2 or 4.

4,359,578

NAPHTHYRIDINE DERIVATIVES AND SALTS THEREOF USEFUL AS ANTIBACTERIAL AGENTS

Jun-ichi Matsumoto, Takatsuki; Yoshiyuki Takase, Amagasaki, and Yoshiro Nishimura, Neyagawa, all of Japan, assignors to Dainippon Pharmaceutical Co., Ltd., Osaka, Japan and Laboratoire Roger Bellon, Neuilly sur Seine, France

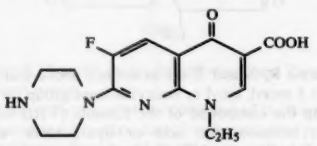
Filed Aug. 23, 1979, Ser. No. 68,966

Claims priority, application Japan, Aug. 25, 1978, 53/104235; Dec. 20, 1978, 157939; Dec. 29, 1978, 53/162095

Int. Cl.³ C07D *471/04*; A61K *31/495*

U.S. Cl. 544—362 **4 Claims**

1. A 1,8-naphthyridine compound of the formula



or a nontoxic pharmaceutically acceptable salt thereof.

4,359,579

SYNTHESIS OF INTERMEDIATE FOR THE MANUFACTURE OF 5,6-DIHYDRO-2-METHYL-N-PHENYL-1,4-OXATHIN-3-CARBOXAMIDE

George Liebermann, Waterloo, and Frederick M. M. Hager, Elmira, both of Canada, assignors to Uniroyal, Ltd., Ontario, Canada

Filed Aug. 24, 1981, Ser. No. 295,394

Claims priority, application Canada, Aug. 11, 1981, 383592

Int. Cl.³ C07D *327/06*

U.S. Cl. 549—14 **10 Claims**

1. A method for making 5,6-dihydro-2-methyl-N-phenyl-1,4-oxathiin-3-carboxamide by cyclization of the intermediate 2-[(2-hydroxyethyl)thio]-3-oxo-N-phenyl-butanamide, in which this intermediate is obtained by the reaction of di-(2-hydroxyethyl) disulfide with acetoacetanilide.

2. A method for making 2-[(2-hydroxyethyl)thio]-3-oxo-N-phenylbutanamide comprising reacting di-(2-hydroxyethyl) disulfide with acetoacetanilide in an ionized form.

4,359,580

PROCESS FOR THE PREPARATION OF SULFUR YLIDE INTERMEDIATES OF INSECTICIDAL PYRETHROIDS

Charles P. Grasso, East Windsor, N.J., assignor to American Cyanamid Company

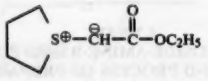
Continuation of Ser. No. 65,391, Aug. 9, 1979, abandoned. This application Feb. 12, 1981, Ser. No. 233,750

Int. Cl.³ C07D *333/46*

U.S. Cl. 549—79 **1 Claim**

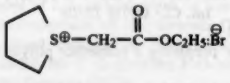
1. A method for the preparation of a compound of the formula

I



which comprises reacting a compound of the formula

II



with solid particulated sodium hydroxide used in 2:1 to 3:1 molar amount per mole of the compound of formula II in a solvent of methylene chloride, and a temperature range of 20° C. to 30° C.

4,359,581

PROCESS FOR THE PRODUCTION OF CARACYCLIN INTERMEDIATES

Werner Skuballa; Bernd Raduechel, and Helmut Vorbrueggen, all of Berlin, Fed. Rep. of Germany, assignors to Schering AG, Berlin, Fed. Rep. of Germany

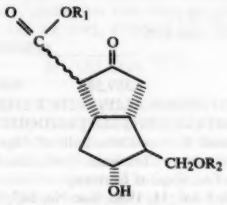
Filed Jun. 5, 1981, Ser. No. 270,716

Claims priority, application Fed. Rep. of Germany, Jun. 6, 1980, 3021895

Int. Cl.³ C07D *309/12, 37/20;* C07C *69/757, 69/76*

U.S. Cl. 549—421 9 Claims

1. A process for preparing a 3-oxo-7-hydroxy-bicyclo[3,3,-0]octan-2-ylcarboxylic acid ester of the formula

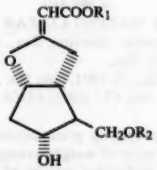


wherein

R_1 is alkyl of 1–6 carbon atoms or phenalkyl of 7–10 carbon atoms and

R_2 is hydrogen, alkyl of 1–6 carbon atoms, phenalkyl of 7–10 carbon atoms, tetrahydropyranyl, tetrahydrofuranyl, α-ethoxyethyl, tri-C_{1-4}-alkylsilyl wherein the alkyl moieties can optionally be substituted by phenyl, or

wherein R_3 is alkyl of 1–6 carbon atoms or aryl of 6–12 carbon atoms, comprising oxidizing the corresponding 7-hydroxy-2-oxabicyclo[3,3,0]octan-3-ylideneacetic acid ester of the formula



wherein R_1 and R_2 are as defined above, to form the corresponding ketone, reacting the latter with a base and then reducing to prepare the 3-oxo-7-hydroxy-bicyclo[3,3,-0]octan-2-ylcarboxylic acid ester.

4,359,582

EXTRACTION OF PANTOLACTONE FROM ITS AQUEOUS SOLUTIONS

Joachim Paust, Neuhofen, and Wolfram Schmidt, Friedelsheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Feb. 8, 1979, Ser. No. 10,726

Claims priority, application Fed. Rep. of Germany, Mar. 3, 1978, 2809179

Int. Cl.³ C07D *307/20*

U.S. Cl. 549—319 1 Claim

1. A process for the extraction of pantolactone from its aqueous solutions by means of an organic extractant, wherein methyl tert.-butyl ether is used as the extractant.

4,359,583

ANTIBIOTICS TM-531 B AND TM-531 C

Taku Mizutani, Ageo; Michio Yamagishi, Tokorozawa; Kazutoshi Mizoue, Saitama; Akira Kawashima, Tokyo; Sadafumi Omura, Ageo; Noboru Otake, Yokohama, and Haruo Seto, Hachioji, all of Japan, assignors to Taisho Pharmaceutical Co., Ltd., Tokyo, Japan

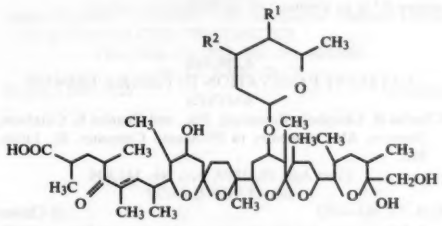
Filed Sep. 15, 1981, Ser. No. 302,017

Claims priority, application Japan, Sep. 16, 1980, 55-128107; Sep. 18, 1980, 55-129576

Int. Cl.³ C07D *309/10*

U.S. Cl. 549—343 3 Claims

1. A compound of the formula



wherein either (a) R^1 is hydroxy and R^2 is hydrogen, or (b) R^1 is methoxy and R^2 is hydroxy, and the salt thereof.

4,359,584

PREPARATION OF P-SUBSTITUTED, AROMATIC AMINES

Franz Merger, Frankenthal, and Gerhard Nestler, Ludwigshafen, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

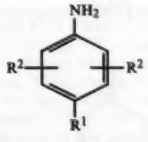
Filed Sep. 8, 1980, Ser. No. 185,401

Claims priority, application Fed. Rep. of Germany, Sep. 22, 1979, 2938764

Int. Cl.³ C07C *85/02*

U.S. Cl. 564—393 6 Claims

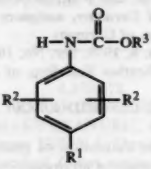
1. A process for the preparation of p-substituted, aromatic amines of the formula



I

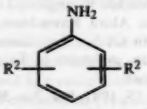
where the individual radical R^1 and R^2 may be identical or different and each is an araliphatic or aliphatic radical, R^1 may also be a monocyclic or bicyclic cycloaliphatic radical and each R^2 may also be an aliphatic-aromatic or aromatic radical,

hydrogen or halogen, wherein a p-substituted, aromatic carbamic acid ester of the formula



II

where R^1 and R^2 have the above meanings and R^3 is an aliphatic radical, is reacted with an aromatic amine of the formula



III

where R^2 has the above meanings, in the presence of an aliphatic alcohol of the formula

R^4—OH IV

where R^4 is an aliphatic or cycloaliphatic radical.

4,359,585

CATALYST PASSIVATION IN PRODUCTION OF AMINES

Charles R. Campbell, Pensacola, Fla., and Charles E. Cutchens, Decatur, Ala., assignors to Monsanto Company, St. Louis, Mo.

Filed Apr. 21, 1980, Ser. No. 141,836
Int. Cl.³ C07C *85/12*
U.S. Cl. 564—492 **13 Claims**

1. In a process for the production of an amine from a nitrile where the nitrile is hydrogenated under pressure in the presence of a Raney nickel catalyst continuously in a reactor thereby to produce the amine which is discharged in a stream from which is recovered both the amine and Raney nickel catalyst, the improvement comprising charging to the process discharge stream comprising the product amine and Raney nickel catalyst an inorganic base whereby the Raney nickel catalyst is passivated and catalytic decomposition of the amine is substantially decreased.

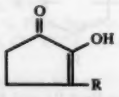
4,359,586

SYNTHESIS 2-ALKYL CYCLOPENTENOLONES

Tse-Lok Ho, Jacksonville, and Shing-Hou Liu, Atlantic Beach, both of Fla., assignors to SCM Corporation, New York, N.Y.

Filed Feb. 12, 1981, Ser. No. 233,630
Int. Cl.³ C07C *45/58, 17/30*
U.S. Cl. 568—341 **9 Claims**

1. Process for preparing alkyl cyclopentenolones having the structure



wherein R is a C_{1-4} straight or branched chain lower alkyl radical which comprises:

(a) reacting a 2-alkyl substituted butadiene with a dihalocarbenoid species to produce a 1,1-dihalo-2-alkyl-2-vinylcyclopropane.

(b) passing the product of reaction (a) through a hot tube reactor at about 200°–350° C. to isomerize it to a 1-alkyl-4,4-dihalocyclopenten-1.

(c) hydrolyzing a 1-alkyl-4,4-dihalocyclopent-1-ene to obtain a 3-alkyl-2-cyclopenten-1-one.

(d) epoxidizing the product of reaction (c) to form 2,3-epoxy-3-alkylcyclopentan-1-one.

(e) isomerizing said 2,3-epoxy-3-alkylcyclopentan-1-one under acid catalysis and isolating a 2-hydroxy-3-alkylcyclopent-2-en-1-one.

4,359,587

METHOD FOR PREPARING CARBONYL COMPOUNDS

Mirkhasil Abdurakhmanov, proezd Morozova, 10, kv. 16, and Rakhmatzhan K. Karimov, kvartal TS-27, 12, kv. 18, both of Tashkent, U.S.S.R.

Filed Oct. 16, 1980, Ser. No. 197,710
Int. Cl.³ C07C *45/39*
U.S. Cl. 568—402 **2 Claims**

1. In a method for preparing carbonyl compounds by vapor-phase oxidizing dehydrogenation of C_1–C_4 alcohols at a temperature of from 500° to 700° C. in the presence of a catalyst, the improvement which comprises utilizing a catalyst consisting essentially of metallic silver in an amount varying from 30–40% by weight of the total catalyst, supported on a carrier consisting essentially of, in the following proportions, in % by weight:

alumina: 9.5 to 13.3

cristobalite: 86.7 to 90.5.

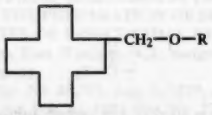
4,359,588

ODORIFEROUS ALIPHATIC ETHERS OF HYDROXYMETHYLCYCLODODECANE

Klaus Burzin, and Werner Otte, both of Marl, Fed. Rep. of Germany, assignors to Chemische Werke Huels, Aktiengesellschaft, Marl, Fed. Rep. of Germany

Filed Jul. 11, 1980, Ser. No. 167,600
Claims priority, application Fed. Rep. of Germany, Jul. 13, 1979, 2928347
Int. Cl.³ C07C *43/115, 43/162*
U.S. Cl. 568—579 **6 Claims**

1. An aliphatic ether of hydroxymethylcyclododecane of the formula



wherein R is a saturated or unsaturated aliphatic hydrocarbon residue of 1–4 carbon atoms.

4,359,589

PROCESS FOR MAKING LINEAR POLYETHERS

Thomas F. Brownscombe, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Jul. 27, 1981, Ser. No. 287,394
Int. Cl.³ C07C *41/03*
U.S. Cl. 568—618 **14 Claims**

1. A process for preparing predominately polymeric linear polyethers having a ratio of weight average molecular weight to number average molecular weight of less than about 1.5, which process comprises:

(a) adding a salt selected from the group consisting of fluoborate salts of a metal selected from the group consisting of magnesium, aluminum, tin, zinc and calcium to a reaction zone maintained at a temperature of about −78° C. to

less than +20° C. in the presence of a hydroxyl-containing compound and in the absence of any additional acid;
(b) contacting a 1,2-monoepoxide with said salt and said hydroxyl-containing compound in said reaction zone therein forming said linear polyethers; and
(c) recovering said linear polyethers.

4,359,590

TITANATE ESTER-STABILIZED BISPHENOLS

Norman W. Dachs, deceased, late of Buffalo, N.Y. (by Georgianna M. Dachs, executrix); James W. Ginter, and Joseph A. Pawlak, both of Cheektowaga, N.Y., assignors to Occidental Chemical Corporation, Niagara Falls, N.Y.

Filed May 11, 1981, Ser. No. 262,377
Int. Cl.³ C07C *37/70*
U.S. Cl. 568—702 **27 Claims**

1. A thermally stabilized composition comprising a bisphenol and a stabilizing amount of a quarternary aliphatic ester of ortho titanic acid in a non-reactive environment for the bisphenol.

4,359,591

PROCESS FOR THE O-SUBSTITUTION OF PHENOLS

Max Fremery, Wesseling; Karl-Heinz Keim, Heimerzheim, and Joachim Korff, Bornheim-Sechtem, all of Fed. Rep. of Germany, assignors to Union Rheinische Braunkohlen Kraftstoff Aktiengesellschaft, Wesseling, Fed. Rep. of Germany

Filed Mar. 30, 1981, Ser. No. 248,709
Claims priority, application Fed. Rep. of Germany, Mar. 29, 1980, 3012357; Jan. 10, 1981, 3100517; Jan. 13, 1981, 3100734; Feb. 5, 1981, 3103839
Int. Cl.³ C07C *37/11*
U.S. Cl. 568—804 **10 Claims**

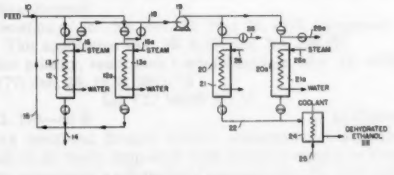
1. In a process for the production of ortho-methyl-substituted phenols by catalytically reacting phenols having at least one free o-position with methanol or dimethyl ether in the presence of a catalyst containing iron oxide and chromium oxide at an elevated temperature in the gas phase, the improvement which comprises reacting a compound selected from the group consisting of phenol, cresol, and xylenol for 0.05 to 10 seconds with methanol or dimethyl ether in a molar ratio of 1:0.1–10 at a temperature of between 270°–390° C. in the presence of a catalyst consisting of iron oxide, chromium oxide, silicon oxide and at least one oxide of a metal of the group consisting of alkaline earth metal, lanthanum and manganese, the molar ratio between the catalyst components being 100:0.1–10:0.1–10:0.01–10.

4,359,592

MULTI-STAGE, ADSORPTION PROCESS FOR SEPARATING ORGANIC LIQUIDS FROM WATER

James C. Chao, West Nyack, N.Y., and Cheng-Yih Jenq, Princeton, N.J., assignors to Hydrocarbon Research, Inc., Lawrenceville, N.J.

Filed Mar. 23, 1981, Ser. No. 246,534
Int. Cl.³ B01D *15/00*
U.S. Cl. 568—916 **11 Claims**



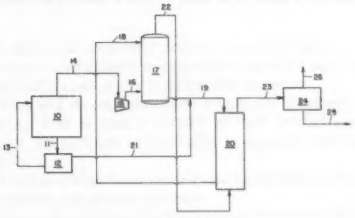
11. A two-stage adsorption process for separating alcohols from an alcohol-water solution, comprising:
(a) passing the feedstream solution containing 5–30 W % alcohol through a bed of particulate-activated, carbon-adsorbent material, and adsorbing at least about 50 W % alcohol on the carbon;
(b) withdrawing an unadsorbed liquid stream containing mainly water;
(c) terminating the adsorption in the activated carbon bed, then heating said bed to temperature range of 50°–100° C. and preferentially desorbing the alcohol in vapor form from the carbon;
(d) withdrawing a vapor stream from step (c) having an increased concentration of alcohol relative to the feedstream, and passing the resulting vapor containing at least about 55 W % alcohol through a second-stage bed of a zeolite-adsorbent material to substantially adsorb the remaining water vapor;
(e) withdrawing from the second-stage adsorbent bed a product vapor stream containing at least about 95 W % purity alcohol; and
(f) heating the adsorbent material in the second-stage bed to desorb the water vapor and regenerate the adsorbent for reuse.

4,359,593

PROCESS FOR RECOVERING ETHANOL FROM DILUTE AQUEOUS SOLUTIONS EMPLOYING SOLID SORBENT

Julian Feldman, Cincinnati, Ohio, assignor to National Distillers & Chemical Corp., New York, N.Y.

Filed Nov. 27, 1981, Ser. No. 325,450
Int. Cl.³ C07C *29/76*
U.S. Cl. 568—916 **11 Claims**



1. A process for recovering ethanol from a dilute aqueous solution thereof which comprises contacting said dilute aqueous ethanol stream with crosslinked polyvinylpyridine resin or nuclear substituted derivative thereof under such conditions that at least a portion of the ethanol will be sorbed by said resin and thereafter desorbing ethanol from said resin.

4,359,594

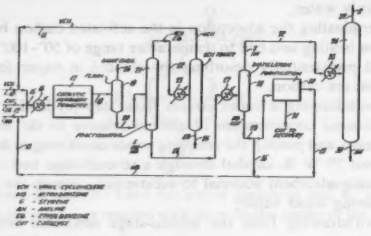
NOVEL PROCESS FOR PREPARING ETHYLBENZENE

John A. Patterson, Fishkill, N.Y.; Wheeler C. Crawford, Houston, and James R. Wilson, Missouri City, both of Tex., assignors to Texaco Inc., White Plains, N.Y.

Continuation of Ser. No. 934,789, Aug. 18, 1979, abandoned. This application Feb. 9, 1981, Ser. No. 232,773
The portion of the term of this patent subsequent to Nov. 11, 1997, has been disclaimed.
Int. Cl.³ C07C *5/41*
U.S. Cl. 585—434 **26 Claims**

1. The method which comprises
passing a charge stream containing vinyl cyclohexene and

$R'NO_2$, wherein R' is alkyl, cycloalkyl, aryl, aralkyl, or alkaryl, into contact with homogeneous hydrogen transfer



catalyst at hydrogen transfer conditions thereby forming product stream containing ethylbenzene; and recovering said product stream containing ethylbenzene.

4,359,595

SELECTIVE PRODUCTION OF OLEFINS

Louis D. Rollmann, Princeton, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 144,740, Apr. 28, 1980, Pat. No. 4,300,011. This application Feb. 2, 1981, Ser. No. 230,921

The portion of the term of this patent subsequent to Nov. 10, 1998, has been disclaimed.

Int. Cl.³ C07C *2/68, 5/22*

U.S. Cl. 585—640 **21 Claims**

1. In a process for converting lower alcohols and/or ethers to lower olefins under conversion conditions in the presence of a catalyst comprising one or more zeolites having a silica to alumina mole ratio of at least 12 and a constrain index of 1 to 12, the improvement comprising contacting said catalyst with one or more bulky heterocyclic organic nitrogen compounds having an effective critical dimension of greater than 6.2 Angstroms and having a pKa of between about 3 and 9.

4,359,596

LIQUID SALT EXTRACTION OF AROMATICS FROM PROCESS FEED STREAMS

Kent A. Howard; Howard L. Mitchell, and Robert H. Waghorne, all of Baton Rouge, La., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Aug. 3, 1981, Ser. No. 289,324

Int. Cl.³ C07C *7/17*

U.S. Cl. 585—856 **14 Claims**

1. A process for extracting aromatic hydrocarbons from a mixed aliphatic/aromatic feed comprising the step of contacting said feed with a solvent comprising a liquid salt of the formula:

$$[R_4Q][A]$$

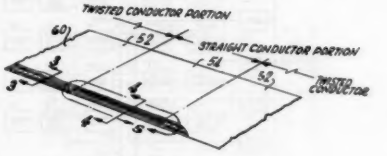
wherein Q is N, P or As; A is a monovalent or polyvalent anion; R_4Q is a monovalent or polyvalent cation in sufficient number to render the salt electrically neutral; R is a hydrocarbon radical independently selected from the group consisting of linear or branched C_1–C_{20} alkyl, C_5–C_{10} cycloalkyl, C_7–C_{20} aralkyl and alkaryl and C_6–C_{10} aryl, including inert or unreactive substituents thereon, and mixtures thereof, wherein the total number of carbon atoms in the four R radicals is at least 16, and wherein not more than one R radical being methyl, and wherein said contacting step is performed above the melting point and below the decomposition point of said liquid salt.

4,359,597

TWISTED PAIR MULTI-CONDUCTOR RIBBON CABLE WITH INTERMITTENT STRAIGHT SECTIONS

Patrick J. Paquin, Hamden, Conn., and Donald D. Lang, Garden Grove, Calif., assignors to Eltra Corporation, Toledo, Ohio

Continuation of Ser. No. 885,440, Mar. 10, 1978, abandoned, which is a division of Ser. No. 725,539, Sep. 22, 1976, Pat. No. 4,096,006. This application Aug. 10, 1979, Ser. No. 65,555
The portion of the term of this patent subsequent to Jul. 5, 1994, has been disclaimed.
Int. Cl.³ H01B *11/04*
U.S. Cl. 174—34 1 Claim



1. A laminated multi-conductor cable, which comprises:
a plurality of laterally spaced, elongated, insulated conductor pairs, each of said insulated conductor pairs having twisted portions alternating, in the longitudinal direction, with individual straight portions, said plurality of said laterally spaced insulated conductor pairs being arranged to form a plurality of laterally spaced and laterally aligned twisted portions alternating with a plurality of laterally equidistantly spaced and laterally aligned individual straight portions;
a first continuously extending laminating plastic film underlying said laterally spaced insulated conductor pairs; and
a second continuously extending laminating plastic film overlying said laterally spaced insulated conductor pairs and being laminated to said first plastic film at nip areas extending laterally between each of said laterally spaced and laterally aligned twisted portions and between each of the individual conductors of each of said laterally equidistantly spaced and laterally aligned individual straight portions, said first and second laminated films tightly surrounding each of said twisted portions and each of the individual conductors of each of said individual straight portions and forming longitudinally extending encapsulating ducts for each of said twisted portions and for each of the individual conductors of each of said individual straight portions to thereby precisely space each of said twisted portions and equidistantly space each of the individual conductors of each of said individual straight portions along their entire lengths within said laminated cable.

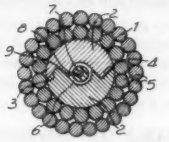
4,359,598

OVERHEAD ELECTRIC TRANSMISSION SYSTEMS

Phillip Dey, New Barnet; Peter Fearns, Huyton; Karl W. Plessner, Kings Langley; Kenneth H. Pickup, Uppermill nr. Oldham; Bernard Gaylard, Altrincham, and Arthur B. Murphy, Rainford, all of England, assignors to BICC Limited, London, England

Continuation of Ser. No. 904,557, May 10, 1978, abandoned.
This application Dec. 29, 1980, Ser. No. 220,291
Claims priority, application United Kingdom, May 13, 1977, 20234/77; Jan. 24, 1978, 2861/78
Int. Cl.³ H01B *11/18*
U.S. Cl. 174—40 R 13 Claims

1. An overhead flexible electric transmission conductor adapted to be freely supported from spaced supports in long lengths, comprising a substantially circumferentially rigid central core comprising at least two bare elongate members of metal or metal alloy assembled together to form an elongate body having a central bore extending throughout the length of the core and constituting an elongate compartment, each bare elongate member of the central core being of such a transverse cross-sectional shape that they inter-engage at least to limit the extent of lateral movement between the elongate members; at



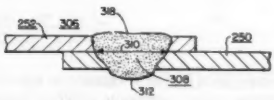
least one separate flexible optical guide loosely housed in the elongate compartment; and, surrounding the central core, at least one stranded layer of helically wound bare elongate elements of metal or metal alloy.

4,359,599

ELECTRICAL CONDUCTOR CONNECTION AND METHOD OF MAKING SAME

Henry F. Benner, Athens, Ga., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 13, 1980, Ser. No. 121,074
Int. Cl.³ H01R *4/02*
U.S. Cl. 174—94 R 5 Claims



1. An electrical conductor connection comprising:
first and second aluminum conductor members each having first and second major opposed flat surfaces;
said first and second aluminum conductor members being lapped with at least a portion of their second and first major flat surfaces, respectively, in contact with one another;
and a fusion of aluminum joining said lapped first and second aluminum conductor members;
said fusion of aluminum having a connection central portion fused to both said first and second aluminum conductor members, and first and second end portions;
said first and second end portions being convexly cupped and extending outwardly past the first and second major flat surfaces of the first and second aluminum conductor members, respectively;
said connecting central portion of the fusion of aluminum having a substantially rectangular configuration at the interface of the second and first major opposed flat surfaces of the first and second aluminum conductor members, respectively, wherein the sides of the connecting central portion of the fusion of aluminum extend between the first and second major opposed flat surfaces of the second aluminum conductor member to define a substantially rectangular shaped end portion such that a plane intermediate and parallel to said major opposed flat surfaces intersects a substantially rectangular shaped perimeter of the connecting central portion of the fusion of aluminum, and wherein the sides of the connecting central portion of the fusion of aluminum extend substantially conically between the second and first major flat opposed surfaces of the first aluminum conductor member to define a substantially circular shaped end portion such that multiple planes intermediate and parallel to said major opposed

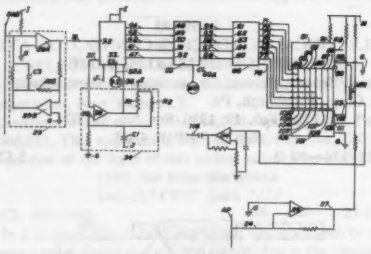
flat surfaces intersect at first substantially elliptical and then substantially circular shaped perimeters of decreasing diameters of the connecting central portion of the fusion of aluminum, proceeding in a direction away from the interface of said second and first major opposed flat surfaces of the first and second aluminum conductor members.

4,359,600

PROGRAMABLE LOW IMPEDANCE DIGITAL ATTENUATORS

Robert Ponto, 9814 Dawson Hill Rd., and Hardison G. Martin, 3700 Wilderness Trail, both of Louisville, Ky. 40299

Filed Nov. 26, 1979, Ser. No. 91,330
Int. Cl.³ H04H *1/02*; H04R *1/02*
U.S. Cl. 179—1 B **4 Claims**



1. A low impedance digital attenuator to selectively attenuate an alternating current composite program signal composed of output signals from a multiplicity of selectively actuated input channels in accordance with the number of actuated input channels including:

(a) at least two input channels each including input channel control means each to provide first direct current actuating signals when the channel is in an actuated operating mode;

(b) summing means to sum said first actuating signals from each input channel to provide a summed actuating signal in analog form;

(c) analog to digital signal converter means to receive said summed actuating signal and provide a digital output actuating signal;

(d) selectively programmed converter means to receive the digital output actuating signal and provide a digital control signal in response to the digital output actuating signal where the digital control signal is nonlinear with respect to the digital output signal;

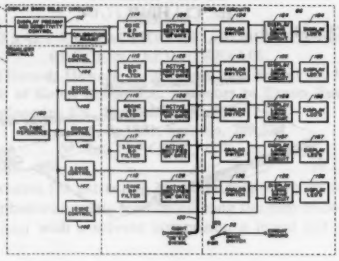
(e) first and second digital to analog converter means each including digital input means to receive the digital control signal and each including reference signal input means and signal output means where the first and second digital to analog converter means selectively attenuate the reference signal in response to the signal received at the digital input means where the reference signal input means of the first digital to analog converter means receives the composite program signal to provide an attenuated program signal from said digital to analog converter signal output means, reference signal source means to supply a selected reference signal to the second digital to analog converter reference input to provide an attenuated reference signal at said second digital to analog converter means output and summing means to combine said attenuated program signal and said attenuated reference signal to provide the selectively attenuated composite program signal.

4,359,601

AUDIO CONTROL SYSTEM

Michael D. D. England, Reseda, Calif., assignor to David O'Reilly, Newbury Park, Calif.

Filed Jan. 4, 1980, Ser. No. 109,939
Int. Cl.³ H03J *5/24*
U.S. Cl. 179—1 D **25 Claims**



1. An audio control system comprising:

means for connecting a stereophonic input signal;

audio processing means for processing said stereophonic signal;

dividing means for dividing the stereophonic signal from said processing means into a plurality of audio frequency bands;

level adjusting means for adjusting the level of each of said plurality of audio frequency bands; and

electronic display means coupled to said level adjusting means for electronically displaying the relative adjusted level in each of said plurality of bands;

said electronic display means including means for dynamically displaying the output of each of said plurality of audio frequency bands comprising:

a pre-amplifier receiving the output of said audio processor;

a band pass filter receiving the output of said pre-amplifier;

an active rectifier for rectifying the output of the band pass filter;

light column means;

means connecting the output of said active rectifier to said light column means whereby the light column means varies according to the level of each audio frequency band.

4,359,602

MULTIPLE INPUT AUDIO PROGRAM SYSTEM

Robert A. Ponto, 9418 Dawson Hill Rd., and Hardison G. Martin, 3700 Wilderness Trail, both of Louisville, Ky. 40299

Continuation-in-part of Ser. No. 4,195, Jan. 17, 1979, abandoned. This application Apr. 7, 1980, Ser. No. 137,783
Int. Cl.³ H04H *1/02*; H04R *1/02*
U.S. Cl. 179—1 B **4 Claims**

1. A multiple input program active audio transmission system including:

(a) at least two program input means, each to generate a system program input signal of varying frequency range in response to receipt of an input program;

(b) at least two input signal channel means each of which is connected to one of said program input means and is responsive to the program input signal from the respective program input means and including:

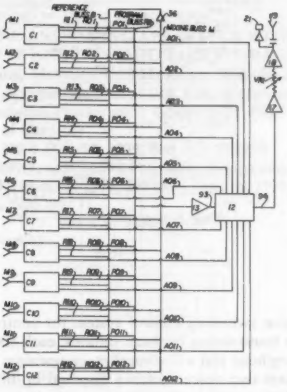
(i) input program signal filter means having an input to receive a portion of said program input signal and to provide a filtered input signal;

(ii) input program signal rectifier means to receive said filtered input signal and provide rectification thereof to provide a rectified direct current input signal;

(iii) comparator means having first input means to receive said rectified direct current input signal and second input means to receive a summation signal which is a function of

rectified direct current input signals from all input channels and adapted to compare said rectified direct current input signal with said summation signal to provide a first comparator output signal in response to a first selected ratio between said rectified direct current input signal and said summation signal and to provide a second comparator signal in response to a second selected ratio between said rectified direct current input signal and said summation signal;

(iv) program switch means having a program signal input to receive said program input signal and a program signal output with control means to transmit said program input



signal to said program signal output upon receipt of said first comparator signal and to terminate transmission of said program input signal upon receipt of said second comparator signal;

(c) summation means to receive said rectified direct current signal from each of said input signal channels to provide said summation signal to be supplied to said comparator means;

(d) signal mixing means to receive program input signals from the outputs of each signal channel means to provide a selectively mixed audio output signal;

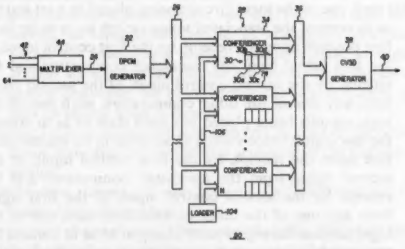
(e) means to transmit said audio output signal to selected locations.

4,359,603

CVSD MULTIPLE CONFERENCE SYSTEM

Donald L. Heaton, Richardson, Tex., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Aug. 13, 1980, Ser. No. 177,655
Int. Cl.³ H04M 3/56
U.S. Cl. 179—1 CN **23 Claims**



1. A CVSD multiple conference system comprising:

a plurality of conferencers each having a plurality of accumulators each for outputting a CVSD conference, and including means in each conferencer for selectively placing any one or all or any combination of a plurality of linear format inputs representing the size or weight of CVSD signals in any one or all or any combination of the accumulators in its respective conferencer independently of the accumulators in the remaining conferencers, and

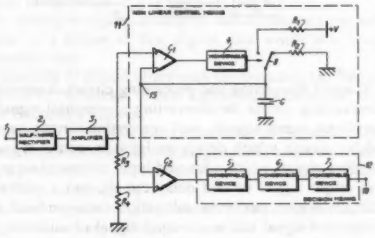
means for deriving from at least a designated one of said accumulators an output so that when the designated accumulator is selected to contain a combination of a plurality of said inputs, said output represents a conference of said CVSD signals.

4,359,604

APPARATUS FOR THE DETECTION OF VOICE SIGNALS

Francois Dumont, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Sep. 25, 1980, Ser. No. 190,894
Claims priority, application France, Sep. 28, 1979, 79 24227
Int. Cl.³ H04B 15/00
U.S. Cl. 179—1 SC **4 Claims**



1. A detection apparatus for receiving an input signal containing noise and for detecting therein the presence of voice signals comprising:

a threshold voltage generator having a control input and an output for supplying a threshold voltage which either rises exponentially as a function of time in accordance with a first time constant which exceeds a maximum syllable period, or drops exponentially in accordance with a second time constant which exceeds the maximum pitch period;

control means having a first and a second input for respectively receiving the input signal and the threshold voltage and an output coupled to the control input of the generator for supplying a control signal making the threshold voltage rise as long as the input signal peak amplitude is greater than the threshold voltage, and making it drop in the opposite case;

attenuation means in a ratio k (k being equal to a positive integer which is not zero) for receiving the input signal and having an output for supplying an attenuated signal;

comparison means for comparing the amplitude of the attenuated signal with the threshold voltage and having an output for supplying a first intermediate signal when the amplitude of the attenuated signal exceeds the threshold voltage;

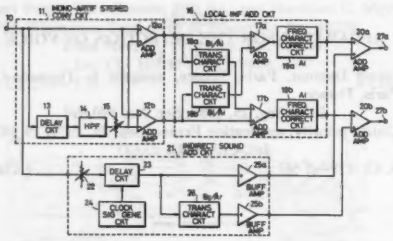
decision means coupled to the output of the comparison means for supplying a signal corresponding to a detection of voice signal when the first intermediate signal shows a burst of transitions whose total duration is greater than T_S (the lower bound of the syllabic period) and when each two successive transitions in the same direction is separated by a time interval lower than Tn (the upper bound of the pitch period).

4,359,605

MONAURAL SIGNAL TO ARTIFICIAL STEREO SIGNALS CONVERTINGS AND PROCESSING CIRCUIT FOR HEADPHONES

Yutaka Haramoto, Zama, and Mitsuru Kikuchi, Kawasaki, both of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Nov. 13, 1980, Ser. No. 208,123
Claims priority, application Japan, Nov. 1, 1979, 54-140480; Nov. 5, 1979, 54-142929
Int. Cl.³ H04R 5/00
U.S. Cl. 179—1 GP 6 Claims



1. A signal converting and processing circuit comprising:

a converting circuit for converting a monaural signal into artificial stereo signals, said converting circuit having a delay circuit which delays an input monaural signal, an adding circuit which adds said input monaural signal and an output signal of said delay circuit, and a subtracting circuit which performs subraction between said input monaural signal and said output signal of said delay circuit, said adding circuit and subtracting circuit producing as outputs artificial stereo signals comprising a first signal and a second signal;

a localizing information adding circuit for adding localizing information of imaginary sound sources to said artificial stereo signals from said converting circuit, said localizing information adding circuit having a first and second transmission characteristic circuits comprising transmission characteristics which are respectively supplied with said first and second signals of said artificial stereo signals, a first adding circuit which adds said first signal and an output signal of said second transmission characteristic circuit, and a second adding circuit which adds said second signal and an output signal of said first transmission characteristic circuit;

an indirect sound adding circuit for adding imaginary indirect sounds to said input monaural signal, said indirect sound adding circuit having delay means for delaying said input monaural signal, a first output circuit which derives an output signal of said delay means as a first indirect sound signal, a third transmission characteristic circuit comprising a transmission characteristic supplied with said output signal from said delay means, and a second output circuit which derives on output signal from said third transmission characteristic circuit as a second indirect sound signal; and

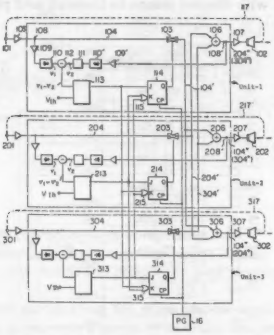
a third and fourth adding circuits which respectively add said first and second signals added with the localizing information provided by said localizing information adding circuit and said first and second indirect sound signals from said indirect sound adding circuit, said third and fourth adding circuits supplying their output signals to right and left speakers of a headphone which is fitted to a listener's ears.

4,359,606

VOICE SWITCHING CONTROL SYSTEM

Sato Shoichi, Minou, Japan, assignor to Toa Electric Co., Ltd., Hyogo, Japan

PCT No. PCT/JP79/00120, § 371 Date Jul. 23, 1980, § 102(e) Date Jul. 23, 1980, PCT Pub. No. WO80/02627, PCT Pub. Date Nov. 27, 1980
PCT Filed May 11, 1979, Ser. No. 253,631
Int. Cl.³ H04M 9/00
U.S. Cl. 179—1 VC 6 Claims



1. A voice switching control system for controlling voice signals for transmission between stations, each station including a microphone and a loudspeaker, comprising:

(a) at least two voice switches disposed in different voice signal transmission channels, respectively;

(b) each of said transmission channels being operatively connected between the microphone of one of the stations and the loudspeakers of the other stations;

(c) means for sensing each output voice signal of the microphones of the stations and each input voice signal to the loudspeakers of the stations;

(d) comparators each for comparing a signal representing the sensed output from the microphone of one of the stations with a signal representing the sensed input to the loudspeaker of the same station;

(e) each one of the comparators selectively producing either a first signal or a second signal in accordance with the relative amplitudes of the output voice signal of the associated microphone and the input voice signal of the associated loudspeaker;

(f) logic circuits each for controlling the associated voice switch at a selected one of two positions, a first position defining an ON state of the voice switch and a second position defining an OFF state of the voice switch;

(g) each one of the logic circuits having a first control input for receiving the output of the associated comparator and a second control input for receiving the output of the other comparators; and

(h) each one of the logic circuits being placed in a set state so as to control the associated voice switch so as to be in its first position upon the receipt, by the first control input, of the first signal from the associated comparator and the receipt, by the second control input, of the second signal from any one of the other comparators, each one of the logic circuits being placed in a reset state so as to control the associated voice switch so as to be in its second position upon the receipt, by the first control input, of the second signal from the associated comparator and the receipt, by the second control input, of the first signal from any one of the other comparators, each one of the logic circuits having its plate changed so as to control the associated voice switch so as to change the position thereof upon the receipt, by the first control input, of the first signal from the associated comparator and the re-

ceipt, by the second control input, of the first signal from any one of the other comparators, whereby a voice message newly inserted into a microphone of any one of the stations serves to interrupt another voice message which has been transmitted to the loudspeaker associated with the microphone, and the newly inserted message is transmitted to any other station without attenuation of the voice signal introduced by the associated voice signal switch.

4,359,607

TELEPHONE ANSWERING APPARATUS WITH SOLID STATE AND DYNAMIC TAPE STORAGE

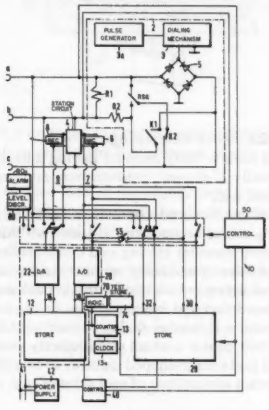
Hubert Hannig, Marburg; Karl H. Krapp, Wehrda, and Heinz Mölleken, Schwalmstadt, all of Fed. Rep. of Germany, assignors to Deutsche Fernsprecher Gesellschaft mbH Marburg, Fed. Rep. of Germany

Filed Dec. 12, 1979, Ser. No. 102,897

Claims priority, application Fed. Rep. of Germany, Dec. 16, 1978, 2854401; Dec. 16, 1978, 2854431; Dec. 16, 1978, 2854516; Sep. 5, 1979, 2935799

Int. Cl.³ H04M *1/64*

U.S. Cl. 179—6.03 **19 Claims**



1. Telephone apparatus comprising:

a housing provided with a dialing device and a station circuit;

a handset provided with a microphone and a receiver associated with the station circuit; and

an answering device integrally arranged in the housing;

the answering device comprising:

a solid state store for storing a message, the solid state store having an input connected to an analog-to-digital converter for converting analog speech signals to digital speech signals and an output connected to a digital-to-analog converter for reconverting the digital speech signals to analog speech signals;

control circuit means for selection and control of the operational state and the operational sequence of the answering device;

pushbutton means on the housing for programming the control circuit means;

reception channel means for connecting the solid state store to the handset microphone for receiving the message; and

reproduction channel means for connecting the solid state store to the handset receiver for reproducing the message.

4,359,608

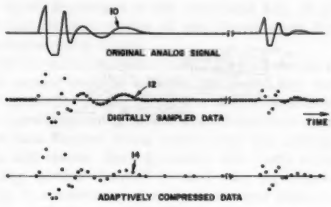
ADAPTIVE SAMPLER

Bobby L. Watson, Idaho Falls, Id., and Ian Aeby, Fremont, Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 26, 1980, Ser. No. 181,535

Int. Cl.³ H04J *6/02*

U.S. Cl. 179—15.55 R **2 Claims**



1. An adaptive digital data compression device for compressing an analog data input signal having variable frequency content, comprising:

(a) an analog-to-digital converter for converting the analog signal to a stream of first digital data words at a constant sampling rate;

(b) a plurality of digital filters each for detecting the frequency content of the stream of first digital data words over respective frequency regions;

(c) a plurality of means, each connected to one of said digital filter, for generating an enabling pulse in response to detecting a preset number of the first digital data words in a respective frequency region;

(d) means for generating a plurality of clock signals each having a rate corresponding to one of the frequency regions;

(e) gating means for selecting one of the clock signals corresponding to a higher frequency region in response to the corresponding enabling pulse to produce a variable rate clock;

(f) means for generating second digital data words having information of a change in the rate of the variable rate clock;

(g) means for generating third digital data words having information of the real time from the change in rate of the variable rate clock;

(h) a first in, first out buffer memory;

(i) a mass memory;

(j) means for clocking the first digital data words into said buffer memory at the rate of the variable rate clock and for clocking the second digital words and the third digital data words into said buffer memory; and

(k) means for clocking the first digital data words, the second digital data words and the third digital data words out of said buffer memory and into said mass memory at the constant sampling rate.

4,359,609

CIRCUIT WITH FEEDBACK FOR CONTROLLING THE IMPEDANCE THEREOF

Russell J. Apfel, San Jose, Calif., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Jun. 20, 1980, Ser. No. 161,489

Int. Cl.³ H04M *3/22*

U.S. Cl. 179—16 F **38 Claims**

1. An impedance control circuit for transferring a voltage signal from a signal source to a second circuit comprising

first impedance means for connecting said source to said second circuit,

means responsive to a signal current generated through said first impedance means for generating a feedback current proportional to said signal current,

second impedance means responsive to said feedback current for generating a first feedback voltage signal related to said feedback current and further related to said signal current, and

means connected between said source and said first impedance means for summing said first feedback voltage signal and said source voltage signal into an output signal to said first impedance means, said summed output signal generating said signal current through said first impedance means,

whereby the impedance of said second impedance means with respect to the impedance of said first impedance means determines the impedance of said circuit.

4,359,610

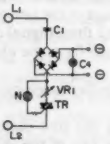
TELEPHONE RINGING CIRCUIT

Pan W. Chang, 2, La. 2, Yi Min St., Miau Li Chung, Kiau Li Hsien, Taiwan

Continuation-in-part of Ser. No. 974,432, Dec. 29, 1978, abandoned. This application Jun. 10, 1980, Ser. No. 158,164

Int. Cl.³ H04M *1/00*

U.S. Cl. 179—84 T **4 Claims**



1. An improved ringing circuit for telephone sets, comprising:

(a) a pair of input terminals having a first input terminal and a second input terminal for receiving A.C. ringing signals from the telephone set;

(b) a full-wave rectifier having first and second input terminals, and first and second output terminals;

(c) a capacitor connected in between the first input terminal for receiving A.C. ringing signals and the first input terminal of the full-wave rectifier;

(d) a triac having an anode, a gate and a cathode, said cathode being connected to the second input terminal for receiving A.C. ringing signals;

(e) a variable resistor having first and second ends, the first end being connected to the second input terminal of the full-wave rectifier and the second end being connected to the anode of said triac;

(f) a neon lamp connected across the gate of said triac and the second input terminal of the full-wave rectifier, said neon lamp having a predetermined firing voltage lower than the voltage of the A.C. ringing signals; said neon lamp being arranged to trigger said triac for activating said rectifier to deliver a D.C. output;

(g) a capacitor connected in parallel across the first and second output terminals of the full-wave rectifier;

(h) a sound producing circuit for producing a sound in accordance with said D.C. output delivered by said full-wave rectifier.

4,359,611

MODULAR SWITCH

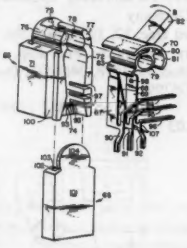
Steve W. Haskins, Corinth, Miss., assignor to Northern Telecom, Inc., Nashville, Tenn.

Filed Jul. 22, 1980, Ser. No. 171,184

The portion of the term of this patent subsequent to Mar. 9, 1977, has been disclaimed.

Int. Cl.³ H01H *9/02*

U.S. Cl. 200—1 TK **20 Claims**



20. A modular switch comprising:

an elongated hollow body member having a back and sides, a substantially U-shaped cross-section, and an open end and a closed end;

a plurality of cantilevered contacts in said body member, including a center contact and at least two side contacts;

a wedge-shaped member biasing said center contact toward one of said sides of said body member, said wedge-shaped member extending outwardly from said back and adjacent to said closed end and having a base facing toward said open end and a thin edge facing toward said closed end, whereby said center contact is selectively positioned on one side of said wedge-shaped member to thereby bias said center contact toward one of said sides of said body member;

an extension on said center contact; and

an actuating member rotatably mounted on said body member and engaging said extension;

whereby the rotation of said actuating member pivots said center contact to change a switch condition of said switch.

4,359,612

UNIVERSAL KEYBOARD AND METHOD OF PRODUCING SAME

Craig E. Rooney, Prairie Village, Kans., assignor to Engineering Research Applications, Inc., Prairie Village, Kans.

Filed Sep. 24, 1980, Ser. No. 190,177

Int. Cl.³ H01H *13/70*; G08C *9/00*; G06C *7/02*

U.S. Cl. 200—5 R **28 Claims**

1. A keyboard, comprising:

a plurality of separate, depressible keys;

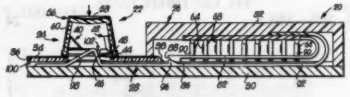
means for developing a keyboard output corresponding to the depressing of particular keys; and

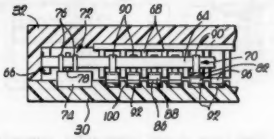
structure associated with each of said keys respectively for operably coupling the associated keys and said output means, including

a first, elongated, resilient, U-shaped element having a nib adjacent the free end thereof and the other end thereof secured against translatory movement;

a second, elongated, resilient, U-shaped element disposed about said first element and having a key-engaging portion beneath the associated key, a nib thereon for engaging the nib of said first element when the first and second elements are in the rest positions thereof, with the end of said second element adjacent said other end of the first element being secured against translatory movement,

said key-engaging portion being configured for, when the associated key is depressed, shifting said nib of the second element in a direction away from the secured ends of the elements such that the nib of the first element is engaged to simultaneously translate and deform the free end of the first element in the same direction; and





a cam surface located for engagement by said nibs during said translation thereof for disengaging the nibs and permitting said first element to return to the rest position thereof,

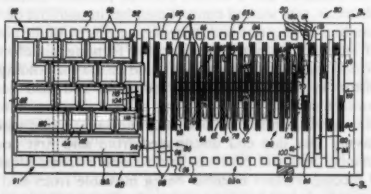
said output means including structure for sensing the return movement of said first element back to said rest position thereof, and means operably coupled with said sensing structure for generating an electrical output signal corresponding to said sensing of return movement.

4,359,613

MOLDED KEYBOARD AND METHOD OF FABRICATING SAME

Craig E. Rooney, Prairie Village, Kans., assignor to Engineering Research Applications, Inc., Prairie Village, Kans.

Filed Mar. 16, 1981, Ser. No. 244,054
Int. Cl.³ H01H *13/70*
U.S. Cl. 200—5 R **18 Claims**



1. A keyboad, comprising:

a plurality of keys;

shiftable means supporting said keys for individual, selective depression thereof;

an engagement surface operably coupled and shiftable with each of said keys;

an elongated, deflectable, resilient flipper associated with each key and having a striking portion and a rest position;

selectively actuatable means for generating an electrical output signal upon striking thereof and located adjacent said flipper striking portions;

means mounting each of said flippers for engagement thereof by the engagement surface coupled with said associated key, upon depression of the associated key, in order to shift said striking portion of said flipper away from said signal-generating means;

structure for releasing each of said flippers from the engagement surface coupled with the associated key, when the striking portion of the flipper has been shifted away from said signal-generating means a predetermined distance,

each of said flippers being constructed and arranged for, upon said release thereof, rapidly and freely shifting the striking portion thereof toward said signal-generating means in a manner to overtravel the rest position of the flipper and thereupon strike and actuate said signal-generating means, and for thereafter shifting said flipper back to the rest position thereof after said striking and actuation of the signal-generating means, the duration of contact time between said flipper striking portions and said signal-generating means being independent of the duration of depression of the corresponding keys,

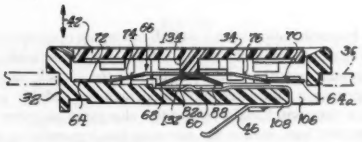
said shifting of said flipper striking portion upon said release of the flipper being independent of any subsequent movement of the corresponding key.

4,359,614

MINIATURE TWO-LEVEL PUSHBUTTON SWITCH

Todd C. Green, Chicago, and Bruce L. Graham, Wheeling, both of Ill., assignors to Illinois Tool Works Inc., Chicago, Ill.

Filed Sep. 24, 1981, Ser. No. 305,064
Int. Cl.³ H01H *13/64, 13/48*
U.S. Cl. 200—5 R **15 Claims**



12. A miniature, two-level pushbutton switch comprising: a base for mounting a plurality of relatively movable electrical contacts and a plurality of relatively fixed electrical terminals, said base including at least one support surface for supporting said contacts and said terminals, and a pushbutton mounted to said base for reciprocal movement along a predetermined straight line, wherein said plurality of relatively movable electrical contacts includes an elongate contact bar having at least one contact surface mounted for movement in response to actuation of said pushbutton in a first direction and a contact dome having at least one contact surface normally spaced apart from said contact surface of said contact bar when said pushbutton is in an unactuated condition, and wherein said plurality of terminals includes a first terminal including means for grippingly engaging a predetermined part of said contact bar and a predetermined part of said support surface, thereby holding said contact bar in assembled condition with said base while achieving electrical contact between said terminal and said contact bar, a second terminal including means for grippingly engaging a predetermined portion of said base and means for urging said contact dome against said support surface, thereby holding said contact dome in assembled condition with said base while achieving electrical contact between

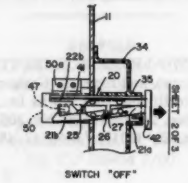
said second terminal and said contact dome, and a third terminal including means for grippingly engaging a predetermined portion of said base and an extension spaced apart from said contact surface of said contact dome when said pushbutton is in an unactuated condition.

4,359,615

SWITCH AND MEANS TO PREVENT UNAUTHORIZED OPERATION THEREOF

Carl E. Meyerhoefer, Little Neck, and Carl H. Meyerhoefer, Dix Hills, both of N.Y., assignors to Black & Decker Inc., Newark, Del.

Filed Aug. 14, 1981, Ser. No. 292,440
Int. Cl.³ H01H *9/20*
U.S. Cl. 200—42 R **24 Claims**



1. In combination with a switch having an operating element with respect "on" and "off" positions, switch actuating means to prevent unauthorized operation of the switch, said means comprising a bifurcated elongated member slidably received within the switch, said bifurcated elongated member having respective legs, means for pivoting the legs relative to each other, the legs having respective first and second portions on opposite sides of the pivoting means, resilient means urging the respective first portions of the legs apart and the respective second portions of the legs together, means allowing the bifurcated elongated member to be slidably inserted into the switch, means operative upon the insertion of the bifurcated elongated member into the switch for engagement of the respective second portion of at least one of the legs with the operating element of the switch, the bifurcated elongated member thereafter having a limited sliding movement relative to the switch for moving the operating element between the respective "on" and "off" positions of the switch, means for preventing withdrawal of the bifurcated elongated member from the switch in the "on" position of the switch, means operative in the "off" position of the switch for allowing the respective first portion of at least one of the legs of the bifurcated elongated member to be pivoted towards the respective first portion of the other leg of the member, and against the force of the resilient means, and concurrently pivoting the respective second portion of said one leg away from the respective second portion of said other leg, thereby disengaging the bifurcated elongated member from the switch operating element, and whereby the bifurcated elongated member thereafter may be slidably withdrawn from the switch, thereby precluding an unauthorized operation of the switch.

4,359,616

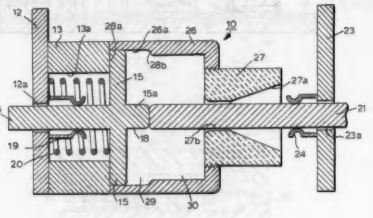
SELF-EXTINGUISHING SWITCH

Yoshihiro Ueda; Hiroyuki Sasao; Hajimu Yoshiyasu, and Soichiro Okuda, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 4, 1979, Ser. No. 72,048

Claims priority, application Japan, Sep. 4, 1978, 53-108294; Sep. 4, 1978, 53-108295; Sep. 4, 1978, 53-108296; Sep. 4, 1978, 53-108297; Sep. 4, 1978, 53-108298; Sep. 4, 1978, 53-108299; Sep. 4, 1978, 53-108300; Sep. 4, 1978, 53-108301; Oct. 17, 1978, 53-128806; Oct. 17, 1978, 53-128807; Oct. 17, 1978, 53-128808; Oct. 17, 1978, 53-128809; Oct. 17, 1978, 53-128810; Oct. 17, 1978, 53-128811; Oct. 17, 1978, 53-128812; Oct. 17, 1978, 53-128813

Int. Cl.³ H01H *33/88*
U.S. Cl. 200—148 A **24 Claims**



1. A gas blast type circuit interrupter, comprising:

a hollow cylindrical member adapted to be disposed within a space having an arc-extinguishing gas therein, said member having a first end and a second end, said second end having a central opening therein;

a cylindrical piston slidably disposed within said hollow cylindrical member for translational movement along the axis of said hollow cylindrical member between a first extreme position toward said first end and a second extreme position toward said second end, said second extreme position being at a predetermined distance from said second end, said piston and said second end thereby defining a variable volume chamber within said hollow cylindrical member, said chamber being in gas communication with said space and accomodating a portion of said arc-extinguishing gas;

stop means disposed on the inside surface of said hollow cylindrical member for stopping said piston at said predetermined distance from said second end;

a first contact member having a portion fixedly disposed at one end of said cylindrical member and having a movable contact in a portion of said chamber, said cylindrical piston being movable with said contact of said first contact member;

a second contact member disposed in said housing for translational movement along the axis of said hollow cylindrical member between a first extreme location in said variable chamber and a second extreme location outside said chamber, said second contact member in said first extreme location having one end thereof engaging with the contact of said first contact member for forming an electrical circuit therewith and engaging said piston for holding said piston in said first extreme position, and said second contact member extending out of said chamber through said opening in said second end, and said second member having said one end disengaged from said first contact member and said piston in said second extreme location;

said second contact member being movable from said first location to said second location for interrupting a circuit and thereby striking an electric arc across said contact members; and

piston moving means responsive to the movement of said second contact from said first to said second locations for moving said piston from said first to said second position,

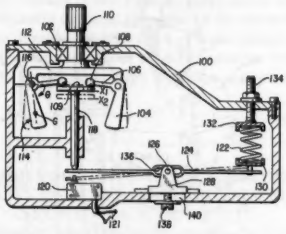
whereby said portion of arc-extinguishing gas compressed by the movement of the piston and the temperature of which is raised by said arc is blown at the arc through said opening when said one end of said second contact member is moved outside of said chamber.

4,359,617

WEIGHTED TRIGGER DEVICE

Jean-Max M. Silhouette, Melun, France, assignor to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation, "S.N.E.C.M.A.", Paris, France

Filed Oct. 10, 1980, Ser. No. 196,056
Claims priority, application France, Oct. 12, 1979, 79 25737
Int. Cl.³ H01H *35/10*
U.S. Cl. 200—153 T **6 Claims**



1. A weighted trigger device, comprising:
a control system;
a spring
a movable element operatively associated with said spring;
a plurality of rotatable weights;
an input shaft for driving said rotatable weights, transforming centrifugal force to which said weights are submitted into an effort which tends to displace said movable element along the axis of said device against the force exerted by said spring so as to trigger said control system as soon as the speed of rotation of said input shaft exceeds a preset level, such that the resistance of said weights is positive and greater than the resistance of said spring in the position occupied by said movable element near the triggering of the control system.

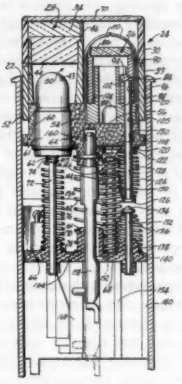
4,359,618

PUSH BUTTON SWITCH WITH SELF-INDICATING MESSAGE DISPLAY

Curtis R. Stevens, Mission Viejo, Calif., assignor to Master Specialties Corporation, Costa Mesa, Calif.

Filed Jan. 23, 1981, Ser. No. 227,720
Int. Cl.³ H01H *9/16*
U.S. Cl. 200—314 **9 Claims**

1. A push button switch with self-indicating message display comprising:
a housing;
a switch mounted in the housing;
a push button having a face projecting from the housing;
means linking the push button to the switch for actuating the switch when the push button is depressed into the housing;
a shutter blade capsule in the housing secured to and movable with the push button;
a message screen positioned inside the capsule facing the face of the push button;
the shutter capsule including at least a pair of flexible shutter blades on opposite sides of the shutter blade capsule, the shutter blades having ends normally projecting toward one another to form an enclosure, the message screen being covered by the shutter blades to obscure the message screen;
means including a rod projecting outside the capsule for movably supporting the screen inside the capsule;
a contact pin supported by the housing and engaging the projecting end of the rod when the push button and capsule are pushed into the housing to activate the switch, the pin limiting the movement of the rod and associated screen relative to the capsule to permit relative movement between the screen and shutter blades for spreading apart the blades to expose the screen;



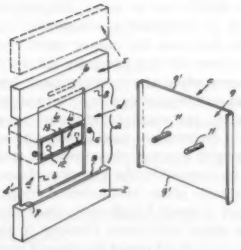
lamp means in the capsule for back-lighting the message screen; and
means including the rod and pin for connecting a source of electrical power to the lamp means, the rod and pin forming a pair of electrical contacts for completing an electrical circuit to the lamp means when the rod is moved into contact with the pin.

4,359,619

COVER FOR A BOX OF ELECTRIC CONTACTS SUCH AS SWITCHES, PUSH BUTTON, SOCKETS AND THE LIKE

Anatolio Bergoltz, 4969 Osorio St., Buenos Aires, Argentina

Continuation of Ser. No. 63,038, Aug. 2, 1979, abandoned. This application Apr. 15, 1981, Ser. No. 254,477
Claims priority, application Argentina, Aug. 11, 1978, 273292
Int. Cl.³ H01H *13/04*
U.S. Cl. 200—333 **12 Claims**



1. For use in combination with a conventional electric box or housing within which one or more receptacles each having electric contacts is contained, an improved universal cover assembly for the box and the one or more receptacles, said cover assembly comprising: a generally flat, uniplanar, rectangular frame surrounding the conventional box, said frame having a central rectangular opening defined therethrough; a

series of removable, rectangular, individual cover plates, each being detachably mounted on said frame, said series of cover plates being arranged transversely across and entirely covering said frame and having outer, flat planar surfaces all aligned in substantially the same plane, said series of cover plates including an upper and lower headboard cover plate detachably mounted to the upper and lower portions of the rectangular frame, the lower end of the upper headboard plate abutting the upper end of the frame rectangular opening and the upper end of the lower headboard plate abutting the lower end of the frame rectangular opening, and at least two, selectively interchangeable intermediate plates arranged between the headboard plates; a series of paired recess means arranged along each vertical side of said frame; pin means on the inner sides of said upper and lower headboard plates for friction fit engagement in the uppermost and lowermost of said paired recess means in said frame, respectively; pin means on the inner side of one of said interchangeable plates for friction fit engagement with paired recess means intermediate of said uppermost and lowermost paired recess means; and pins means on the inner side of the other of said interchangeable plates for friction fit engagement with a receptacle located in the box, said one or said other of said intermediate plates being selected for use in said assembly depending upon the type of receptacle to be located within the box.

5. For use in combination with a conventional electric box or housing within which one or more receptacles each having electric contacts is contained, an improved universal cover assembly for the box and the one or more receptacles, said cover assembly comprising: a generally flat, uniplanar, rectangular frame surrounding the conventional box, said frame having a central rectangular opening defined therethrough; a series of removable, rectangular, individual cover plates, each being detachably mounted on said frame, said series of cover plates being arranged transversely across and entirely covering said frame and having outer, flat planar surfaces all aligned in substantially the same plane, said series of cover plates including an upper and a lower headboard cover plate detachably mounted to the upper and lower portions of the rectangular frame, the lower end of the upper headboard plate abutting the upper end of the frame rectangular opening and the upper end of the lower headboard plate abutting the lower end of the frame rectangular opening, and at least one intermediate plate arranged between the headboard plates; a series of paired recess means arranged along each vertical side of said frame; pin means on the inner sides of said upper and lower headboard plates for friction fit engagement in the uppermost and lowermost of said paired recess means in said frame, respectively; and pin means on the inner side of said intermediate plate for friction fit engagement with paired recess means intermediate of said uppermost and lowermost paired recess means.

7. For use in combination with a conventional electric box or housing within which one or more receptacles each having electric contacts is contained, an improved universal cover assembly for the box and the one or more receptacles, said cover assembly comprising: a generally flat, uniplanar, rectangular frame surrounding the conventional box, said frame having a central rectangular opening defined therethrough; a series of removable, rectangular, individual cover plates, each being detachably mounted on said frame, said series of cover plates being arranged transversely across and entirely covering said frame and having outer, flat planar surfaces all aligned in substantially the same plane, said series of cover plates including an upper and a lower headboard cover plate detachably mounted to the upper and lower portions of the rectangular frame, the lower end of the upper headboard plate abutting the upper end of the frame rectangular opening and the upper end of the lower headboard plate abutting the lower end of the frame rectangular opening, and at least one intermediate plate arranged between the headboard plates; a series of paired recess means arranged along each vertical side of said frame; pin means on the inner sides of said upper and lower headboard plates for friction fit engagement in the uppermost and lowermost of said paired recess means in said frame, respectively; and pin means on the inner side of said intermediate plate for friction fit engagement with a receptacle located in the box.

4,359,620

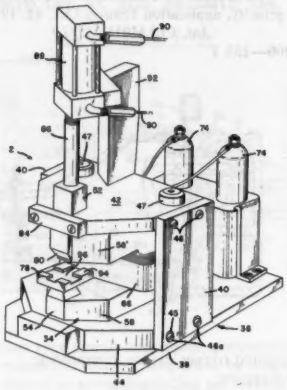
INDUCTION HEATING APPARATUS

Joseph R. Keller, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Continuation-in-part of Ser. No. 857,955, Dec. 6, 1977, abandoned. This application Dec. 17, 1979, Ser. No. 104,254

Int. Cl.³ H05B *6/10, 6/40*

U.S. Cl. 219—10.73 **21 Claims**



1. An induction heating apparatus for heating an electrically conductive workpiece, said apparatus comprising:

a generally C-shaped core made of a magnetic material having a high magnetic permeability and having two opposed ends, said core being designed to efficiently focus a varying magnetic field of high flux density between said two ends, the distance between said ends being substantially less than both the height dimension and the width dimension of said core and said core being tapered at said two ends so that the area of a cross-section of said magnetic material perpendicular to a path running through the center of said core from end to end is substantially larger throughout most of the core than is the area of such a cross-section near said two ends;

a resonsant circuit including a capacitance and an exciting coil surrounding said core; and

driving means for supplying a periodic voltage to said resonant circuit so as to cause an alternating current to flow in said resonant circuit and in said coil, said driving means including means for detecting the phase of said current flowing in said resonant circuit and means for altering the frequency and phase of the periodic voltage supplied by said driving means to said resonant circuit so that said supplied voltage has a predetermined phase relationship to said current in said resonant circuit, the maintenance of which phase relationship causes said resonant circuit to operate at resonance;

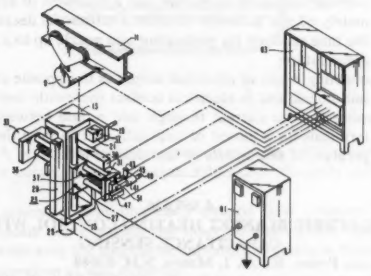
wherein said means for altering the frequency and phase of the periodic voltage supplied by the driving means includes control means for producing a control signal as its output which has substantially the same amplitude and phase as the voltage which is to be supplied by said driving means to said resonant circuit, and wherein said driving means includes a power amplifier which has an output which is connected to said resonant circuit, a source of relatively positive voltage, a source of relatively negative voltage, and at least one positive and at least one negative switching device, each switching device having an input, an output and a control electrode, said positive switching

device including means for conducting between its input and its output electrode when the voltage of its output electrode is significantly less than that of its input and control electrodes, and said negative switching device including means for conducting between its input and its output electrode when the voltage of its output electrode is significantly greater than that of its input and control electrodes, said input electrode of said positive switching device being connected to said source of relatively positive voltage, said input electrode of said negative switching device being connected to said source of relatively negative voltage, said output electrodes of each said switching device being connected to said output of said power amplifier, and said control electrode of each said switching device being connected to said output of said control means so that, if said resonant circuit tends to cause the voltage at said output of said power amplifier to be significantly different than that of the control signal, at least one of said switching devices will conduct current to said output of said power amplifier until its voltage does not differ significantly from that of said control signal.

4,359,621
METHOD FOR CONTINUOUSLY WELDING A PLURALITY OF TUBES DISPOSED IN MULTIPLE ROWS TO A TUBE SHEET

Robert E. Monley, Murrysville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 167,995, Jul. 14, 1980, abandoned. This application Nov. 9, 1981, Ser. No. 319,772
Int. Cl.³ B23K *9/225*
U.S. Cl. 219—60.2 **9 Claims**



1. A method for continuously welding at least a portion of multiple rows of tubes to a tube sheet utilizing apparatus having a carriage into which an interchangeable probe and welding torch are placed, the carriage can be driven rectilinearly in X, Y and Z directions to encompass said portion of said multiple rows of tubes, said method comprising the steps of:

placing the probe in the carriage and moving the probe into each tube to be welded to the tube sheet encompassed in said portion of said multiple rows of tubes;

sending a signal to a controller indicating that the probe is within a tube to be welded to the tube sheet;

recording at the controller the X, Y and Z position of the probe which indicates the X, Y position of each tube and the diameter of each tube;

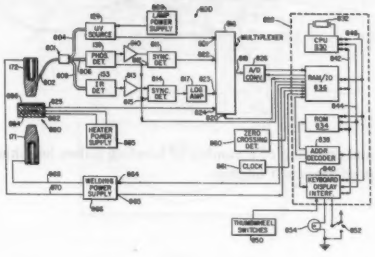
replacing the probe with a welding torch; and

forming a continuous weld following a predetermined path which includes a predetermined number of locations disposed about the periphery of each tube having its X and Y positions recorded to continuously weld a plurality of tubes in multiple rows to the tube sheet.

4,359,622
CONTROLLER FOR SPOT WELDING

Ashod S. Dostoomian, Stoukhim; Alan A. Richard, Seekona; Alan C. Traub, Framingham, and Riccardo Vanzetti, Brockton, all of Mass., assignors to Vanzetti Infrared & Computer Systems, Inc., Canton, Mass.

Filed May 19, 1980, Ser. No. 150,808
Int. Cl.³ B23K *11/24*
U.S. Cl. 219—110 **21 Claims**



1. A welding controller for a spot welder having a welding tip for contacting a workpiece and injecting an electric welding current into the workpiece to produce a spot weld and having a control signal input for receiving a signal for controlling the magnitude of the welding current comprising a well located in the interior of said welding tip, a thermographic phosphor disposed in said well in thermal contact with said welding tip so that the intensity of phosphorus radiation emitted by the phosphor when it is illuminated is a measure of the temperature of the phosphor, a multi-filament fiber optic cable having a trunk portion extending into said well in close proximity to said phosphor and a plurality of branches extending outwardly therefrom, a phosphor illumination source disposed adjacent the end of a first one of said branches for supplying radiation for illuminating said phosphor, first radiant-energy sensor means disposed adjacent a second one of said branches responsive to radiant-energy in a first wavelength range for producing an output signal, second radiant energy sensor means disposed adjacent the end of a third one of said branches responsive to radiant energy in a second wavelength range for producing an output signal, memory means adapted to contain data indicative of the desired thermal pattern for a weld and electronic circuit means operatively associated with said first and second sensor means and said memory means for comparing the output signals of said first and second sensor means with the data in said memory means to provide a control signal for controlling the magnitude of the welding current.

4,359,623
METHOD AND APPARATUS FOR BONDING TERMINALS TO ELECTRICAL DEVICES

William J. Fanning, Glen Ellyn, Ill., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Jan. 5, 1981, Ser. No. 222,441
Int. Cl.³ B23K *11/00*
U.S. Cl. 219—111 **36 Claims**

1. A method of bonding a terminal to an electrical component, which comprises:

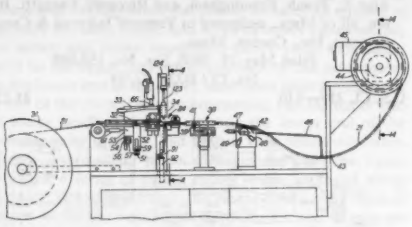
engaging the terminal with a bonding site on the component;

applying a predetermined number of electrical bonding pulses to the terminal to resistance heat and bond the terminal to the component at the bonding site;

sensing the magnitude of the current of each of the bonding pulses;

counting the number of bonding pulses above a predetermined magnitude; and

automatically reapplying said predetermined number of bonding pulses to the terminal in response to the sensing



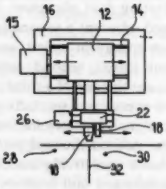
and counting of a number of bonding pulses less than said predetermined number.

4,359,624

WELDING APPARATUS WITH AUTOMATIC FOLLOWING OF THE JOINT TO BE WELDED

Raymond Wascat, Cuffies by Soissons, France, assignor to Bignier Schmid-Laurent, France

Filed Mar. 4, 1981, Ser. No. 240,503
Claims priority, application France, Mar. 18, 1980, 80 06028
Int. Cl.³ B23K *9/12*
U.S. Cl. 219—124.34 **8 Claims**



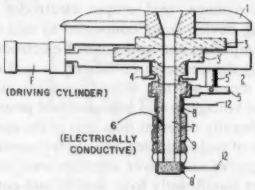
1. Welding apparatus for welding a joint between two plates, said apparatus comprising a frame, at least one transverse guide carried by the frame, a welding torch mounted for movement along the guide transversely of the joint, drive means for adjusting the position of the torch along the guide, a further guide, said further guide being fixed on the torch, a carriage mounted on said further guide for movement therealong with respect to the torch transversely of the general direction of the joint to be welded, further driving means for regularly reciprocating the carriage along said further guide, optical sensor means for optically sensing said joint, said optical sensing means being carried by said carriage and being arranged to supply an electrical pulse each time said optical sensor means passes over the joint, reference sensor means for sensing a central reference position to thereby supply a pulse when the optical sensor means passes the axis of the torch, a measuring circuit for developing an algebraic measurement of the difference in time between the said pulses in each reciprocation cycle of the movable carriage, and a control circuit connected to the measuring circuit and arranged to actuate the torch-driving motor in a sense which leads to a reduction in said difference in time.

4,359,625

METHOD OF PREHEATING IMMERSION NOZZLE FOR CONTINUOUS CASTING

Tamio Okada, Warabi, and Kazumasa Murakami, Nagoya, both of Japan, assignors to Nippon Crucible Co., Ltd., Tokyo, Japan

Filed Nov. 7, 1979, Ser. No. 91,923
Claims priority, application Japan, Nov. 7, 1978, 53-137151
Int. Cl.³ B22D *11/10*; B67D *5/62*; H05B *3/40*
U.S. Cl. 219—300 **2 Claims**



1. A method of preheating an immersion nozzle for continuous casting, comprising:

providing a nozzle made of an electrically conductive refractory material having sufficient resistance so that, upon being subjected to the passage of current therethrough, said nozzle is caused to be heated, said material of said nozzle being resistant to the material of the melt in a mold, and said material comprising a mixture of an electrically conductive graphite and/or silicon carbide and at least one member selected from the group consisting of alumina, zircon, zirconia, fused silica and a metallic silicon, and a binder;

covering said nozzle with a thermal insulating cover having thermal insulating properties and a thickness of approximately 60 mm sufficient to allow a substantial decrease in the time required for preheating said nozzle up to a desire temperature;

connecting a pair of electrical terminals to opposite ends of said nozzle and in electrical contact therewith; and

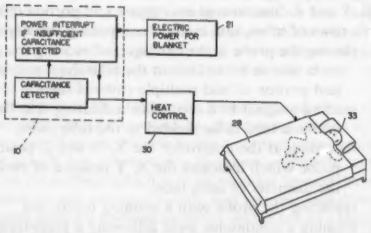
passing electric current through said nozzle between said terminals for a period of time sufficient to raise the temperature of said nozzle to said desired level.

4,359,626

ELECTRIC BLANKET HEATING CONTROL WITH CAPACITANCE SENSING

Bronson Potter, R.F.D. 1, Mason, N.H. 03048

Continuation-in-part of Ser. No. 131,527, Mar. 18, 1980, abandoned. This application Sep. 19, 1980, Ser. No. 188,965
Int. Cl.³ H05B *1/02*
U.S. Cl. 219—490 **17 Claims**



1. An electric blanket control for use with a blanket having an electrical heating circuit that includes an electrical resistance wire array in an expanse of blanket, the control effective

to deactivate power to the heating circuit when the blanket is unattended, said control comprising means for applying electric power to said resistance wire array to generate heat in said expanse of blanket, a capacitance detector for said heating circuit, said capacitance detector being arranged for connection to said resistance wire array and constructed and adapted to respond to differences in the capacitance of the heating circuit attributable to the presence or absence of the user under the heating wire of the blanket, and switch means responsive to said capacitance detector adapted to interrupt power flow to said heating circuit when the capacitance value of the heating circuit indicates the absence of the user under the heating wire of the blanket.

4,359,627

PREHEATER MOUNTED WITHIN A WELL

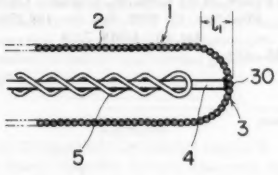
Yasuo Takeichi, Ichikawa, Japan, assignor to Daido Sangyo Co., Ltd., Chiba, Japan

Filed Oct. 10, 1980, Ser. No. 196,035

Claims priority, application Japan, May 23, 1980, 55-70967; May 23, 1980, 55-70968

Int. Cl.³ H05B *3/80*

U.S. Cl. 219—523 **7 Claims**



1. A heater assembly for insertion into and withdrawal from a tube curved along its length, said heater assembly comprising:

a generally hemispherically shaped heat resistant head means for engaging the inner surface of said tube and following the lengthwise curvature of said tube during the insertion of said assembly;

core means for withdrawing said head means from said tube, and comprising a heat resistant material attached to said head means and extending substantially the entire length of said assembly;

flexible housing means for enclosing said core means in spaced relation with said housing means and comprising a heat resistant material tightly wound into spiral turns to provide a generally tubular configuration having substantially smooth internal and external surfaces, said housing means attached to said head means and extending substantially the entire length of said assembly;

electric means for heating said tube, said heating means unitary with said assembly and extending along at least a portion of the length of said assembly;

said core means and said heating means having the characteristics of bending substantially in unison with said housing means along the length of said assembly during insertion into and withdrawal from said curved tube to retain a spaced relation from said housing means; and said core means further comprising means for opposing substantial separation of said spiral turns during said withdrawal.

4,359,628

NAVIGATIONAL AID

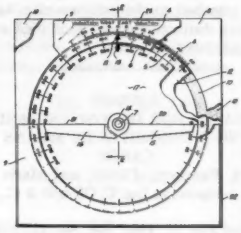
Leon W. Lambert, 42A Belmore St., Dundas, Sydney, New South Wales, Australia (2117)

Filed Sep. 24, 1980, Ser. No. 190,440

Claims priority, application Australia, Oct. 11, 1979, PE0892

Int. Cl.³ G06G *1/08*

U.S. Cl. 235—61 NV **5 Claims**



1. A navigational aid device comprising first, second and third progressively overlaying sheets of material, said sheets being relatively rotatable about a common axis and being respectively inscribed with first, second and third scales, said first scale being indicative of magnetic variation, said second scale being indicative of magnetic heading and said third scale being indicative of relative bearing, at least said second and third sheets being in the form of concentrically mounted discs, said third sheet being of a lessor diameter than said second sheet, said device further including two centrally mounted independently operable rotatable arms defining two movable radial lines intersecting said scales and said axis, said axis being defined by centrally located pivot means securing said sheets and arms together for rotation about said axis, said pivot means having a central aperture such that when said device is placed on a map the map location appearing on said axis is visible through said aperture to an operator using said device, said aperture permitting said operator to place a mark directly onto said map location through said aperture whilst said device remains in position on said map.

4,359,629

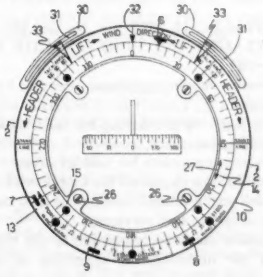
TACTICAL INDICATOR FOR BULKHEAD AND OTHER COMPASSES

Kevin E. Shephard, Wollstonecraft, Australia, assignor to J & K Shepard Pty. Limited, Wollstonecraft, Australia

Filed Jul. 8, 1980, Ser. No. 166,886

Int. Cl.³ G06G *1/08*

U.S. Cl. 235—78 N **3 Claims**



1. A device adapted for use with a compass for tactical yacht racing comprising a compass ring having suitable 0° to 360°

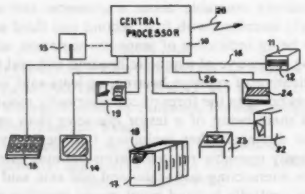
markings thereon around the ring; and an information ring having markings of at least "wind direction," "tack angle" at 45° on either side of "wind direction;" "start line" at 90° on either side of "wind direction;" "wing mark" at 135° on either side of "wind direction;" said compass ring being rotatable with respect to said information ring, and the device further comprising releasable means for locking the compass ring against rotation with respect to the information ring, and a correction factor ring rotatable with respect to the other rings and releasably attached to the compass ring, said correction factor ring having distinctive markings at least at the positions 0°, 135°, 225° and 180°.

4,359,630

APPARATUS FOR DEPOSITING AND/OR WITHDRAWING BANK-NOTES BY MEANS OF CREDIT CARDS

Lucio Simonotti, Banchette d'Ivrea, and Mario Sella, Turin, both of Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy

Filed Jan. 22, 1981, Ser. No. 227,239
Claims priority, application Italy, Jan. 25, 1980, 67105 A/80
Int. Cl.³ G06K *5/00*
U.S. Cl. 235—379 **12 Claims**



1. Apparatus for depositing and/or withdrawing bank-notes by means of credit cards, comprising a central unit, a series of peripheral units operable by said central unit in accordance with a program corresponding to determined commands, a power supply unit operated by the mains voltage in order to supply said central unit and said peripheral units, and a relay device sensitive to a drop in said mains voltage in order to connect said apparatus to an electric battery, characterised by means which indicate the program stage executed in order to give rise to a modification of said program which depends on said stage.

4,359,631

SELF-SERVICE TERMINAL

Lawrence B. Lockwood, 5935 Folsom, La Jolla, Calif. 92037; Michael Wells, and Henri J. A. Charmasson, both of San Diego, Calif., assignors to Lawrence B. Lockwood, La Jolla, Calif.

Filed Jul. 11, 1980, Ser. No. 168,953
Int. Cl.³ G07F *7/02;* **H04Q** *1/00;* **G11B** *5/00*
U.S. Cl. 235—381 **11 Claims**

1. An automatic vending apparatus operable by a customer which comprises:

means for selectively promoting by audio-visual presentation, the sale of services;

means for accepting orders for said services;

means for collecting payments for said services;

means for delivering to said customer at least one document allowing access to said services;

a programmable machine responsive to the request of said customer for directing the operation of said various means;

a cabinet housing said various means and programmable machine;

said automatic vending apparatus further comprising:

(i) a ring-shaped carousel having a plurality of box-like stations, each having an opening at the bottom;

(ii) means for rotating said carousel;

(iii) within each station, releasable means for holding goods above said opening;

(iv) a pocket under said ring for receiving goods falling through the opening of a particular station positioned immediately above said pocket; and

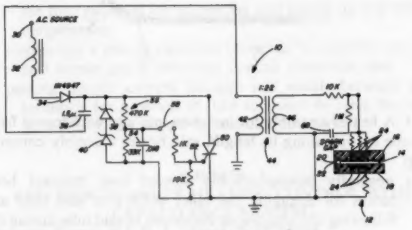
(v) means for releasing the means for holding of said particular station.

4,359,632

FIRING CIRCUIT FOR CARD READER DEVICE

Charles R. Fisher, 34781 Glen Dr., Eastlake, Ohio 44094

Filed Sep. 17, 1980, Ser. No. 188,234
Int. Cl.³ G06K *7/06*
U.S. Cl. 235—451 **4 Claims**



1. Circuitry for selectively providing a high voltage to opposed portions of a spark gap card reader comprising:

(a) an alternating source of electrical energy;

(b) a diode for providing single wave rectification of signals from said source, said diode being alternately forward and reverse biased by said source;

(c) a capacitor coupled to said alternating source through said diode for storing electrical energy;

(d) transformer means including an output coupled to one portion of said card reader and further including an input winding having one end coupled to said capacitor and another end coupled to ground;

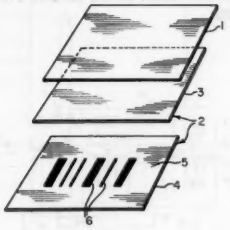
(e) controlled rectifier means including a gate, said controlled rectifier means having an anode coupled to a junction between said capacitor and said diode and a cathode coupled to ground such that when said diode is reverse biased, said controlled rectifier means is also reverse biased; and,

(f) means to selectively energize said gate thereby discharging said capacitor to cause the transformer means to transmit a voltage to said card reader.

4,359,633
SPECTRALLY-LIMITED BAR-CODE LABEL AND IDENTIFICATION CARD

James S. Bianco, 217 Brainard Rd., Enfield, Conn. 06082

Filed Oct. 28, 1980, Ser. No. 201,418
Int. Cl.³ G06K 7/12
U.S. Cl. 235—468 14 Claims



1. An article for storing information in a form substantially concealed from the unaided human eye, comprising:

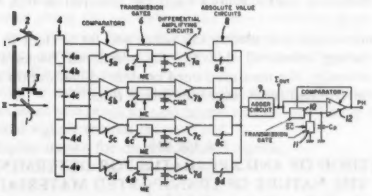
a base member forming a surface having at least one first region and at least one second region arrayed thereon in accordance with a predetermined information code, said first region being adapted substantially to absorb and said second region being adapted substantially to reflect invisible radiation in a first predetermined spectral range; said first and second regions being further adapted substantially to absorb visible radiation in a second predetermined spectral range; and

means forming a filter disposed on said surface for transmitting radiation in at least said first and second predetermined spectral ranges and for substantially absorbing visible radiation outside said second predetermined spectral range.

4,359,634
AUTOMATIC FOCUSING DEVICE

Takeo Saito; Shinji Nagaoka; Yuzuru Takazawa, and Takashi Segawa, all of Shikawatashi, Japan, assignors to Seiko Koki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 25, 1980, Ser. No. 143,874
Int. Cl.³ G01J 1/20
U.S. Cl. 250—201 7 Claims

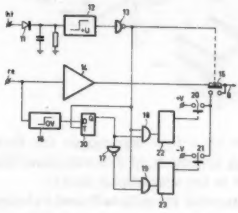


1. An automatic focusing device for use with a focus detecting unit which transmits a focus detection signal corresponding to the object distance by photoelectrically comparing optical images transmitted through a stationary mirror system having a stationary mirror and a movable mirror system having a movable mirror comprising: pulse generating means for generating a pulse signal corresponding to an angle of rotation of the movable mirror of the movable mirror system; first counting means for counting the pulses generated by said pulse generating means; second counting means receptive of the pulse count counted by said first counting means when a focus detection signal is generated by said focus detecting unit for counting the pulses generated by said pulse generating means and generating a pulse signal corresponding to the movement of an actuating means; detecting means for detecting when the pulse count counted by said second counting means reaches a fixed count and producing a corresponding output; and control means for interrupting the movement of the actuating means in accordance with the output of said detecting means.

4,359,635
TRACKING DEVICE

Ulrich Gross, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 11, 1980, Ser. No. 186,076
Claims priority, application Netherlands, Apr. 3, 1980, 8001974
Int. Cl.³ H04N 5/76
U.S. Cl. 250—201 5 Claims



1. An apparatus for reading information from a record carrier having a plurality of adjacent information tracks, said apparatus comprising a transducer for converting information contained in said tracks into an electrical output signal, means for producing relative movement between said transducer and said record carrier so that said transducers scans a track to be read, said output signal having an envelope varying with transverse deviations in the position of said transducer relative to the center of the track being read, control means for moving said transducer relative to the record carrier in a direction transverse of the direction of the tracks, means for generating a control signal having a magnitude which varies with said transverse deviations in the position of said transducer and a positive or negative polarity dependent on the direction of said transverse deviations, and means responsive to the said envelope of said output signal for applying said control signal to said control means when said output signal exceeds a first value and for applying to said control means a further signal when said output signal falls below a second value, said further signal being a positive or a negative voltage and said applying means being arranged to apply to said control means said positive voltage if said control signal has a positive polarity and said negative voltage if said control signal has a negative polarity, said control means being responsive to said control and further signals and in response thereto moving said transducer so as to counteract any positional deviations thereby maintaining said transducer centered on the track being read.

4,359,636
DETECTOR BALANCE APPARATUS AND METHOD EMPLOYING SELECTIVE MASKS

Norman L. Stauffer, Englewood, Colo., assignor to Honeywell Inc., Minneapolis, Minn.

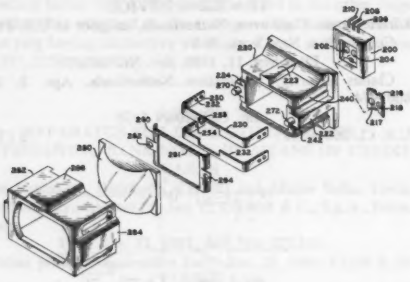
Filed Dec. 5, 1980, Ser. No. 213,438
Int. Cl.³ G01J 1/36
U.S. Cl. 250—204 8 Claims

1. Apparatus for adjusting the outputs of a first and a second pair of radiation detectors receiving radiation from a remote object through a lens in first and second paths respectively comprising:

positioning means mounting the first pair of detectors to receive a first image of the exit pupil of the lens and

mounting the second pair of detectors to receive a second image of the exit pupil of the lens, the position of the first pair of detectors in the first image being displaced from the position of the second pair of detectors in the second image;

first adjustable means positioned to be moveable into the first path and operable to block a portion of the radiation



received by a first detector in the first pair while not blocking a portion of the radiation received by either detector in the second pair; and

second adjustable means positioned to be moveable into the second path and operable to block a portion of the radiation received by a first detector in the second pair while not blocking a portion of the radiation received by either detector in the first pair.

4,359,637

FEELER FOR A MONITORING APPARATUS

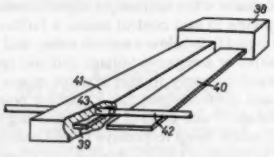
Benno Perren, Austrasse 33, 5430 Wettingen, Switzerland

Filed Apr. 14, 1980, Ser. No. 140,248

Claims priority, application Switzerland, Apr. 20, 1979, 3726/79

Int. Cl.³ G02B *5/14*

U.S. Cl. 250—227 **7 Claims**



1. A feeler arrangement for a monitoring apparatus comprising:

a light source for generating a monitoring signal;

a pair of optical conductor means for transmitting the monitoring signal;

a light receiver which, in the presence of a change of the monitoring signal, generates a fault signal;

said pair of optical conductor means coacting with one another to define a separation location embodying an optical junction, the transmittance of which can be altered as a function of a parameter which is to be monitored;

respective bimetallic elements upon which there are arranged both of said optical conductor means; and

one of said respective bimetallic elements being encased within a material having a reduced thermal conductivity.

4,359,638

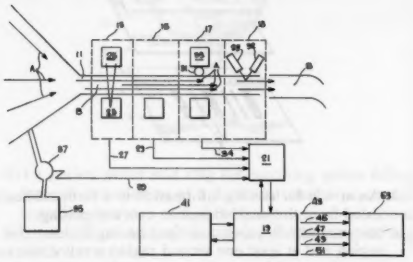
METHOD FOR CONTINUOUSLY DETERMINING THE COMPOSITION OF BUTTER AND SIMILAR SUBSTANCES FROM A MANUFACTURING PROCESS

John J. Allport, Saratoga, Calif., assignor to Zikonix Corporation, Sunnyvale, Calif.

Continuation-in-part of Ser. No. 92,983, Nov. 9, 1979, Pat. No. 4,266,425. This application Feb. 9, 1981, Ser. No. 232,397

Int. Cl.³ G01N *33/06, 23/203, 27/22*

U.S. Cl. 378—50 **7 Claims**



1. A non-destructive method for continuously determining the water and fat content of a material such as butter as it emerges from the manufacturing process comprising:

measuring the instantaneous dielectric constant of the material after it emerges from the manufacturing process,

measuring the density of the material after it emerges from the manufacturing process,

measuring the curd content of the material,

continuously calculating the water and fat content of the material by comparing the measured dielectric constant, the measured density and the measured curd content to calibration values determined from prior laboratory tests.

3. A non-destructive method for continuously determining the water and fat content of a material such as butter as it emerges from a manufacturing process comprising:

measuring the instantaneous density of the material after it emerges from the manufacturing process,

measuring the curd content of the material,

irradiating the material as it emerges from the manufacturing process with low energy X or gamma ray radiation,

measuring the intensity of low energy X or gamma ray radiation backscattered from the material as it is irradiated,

continuously calculating the water and fat content by comparing measured density, the measured backscattered intensity, the measured curd content to calibration values determined from prior laboratory tests.

4,359,639

METHOD OF AND APPARATUS FOR DETERMINING THE NATURE OF TRANSPORTED MATERIAL

John S. Wykes, Derby; Piotr M. Surzyn, Burton-on-Trent; Gerard M. Croke, Burton-on-Trent, and Ian Adsley, Burton-on-Trent, all of England, assignors to Coal Industry (Patents) Limited, London, England

Filed Jan. 3, 1980, Ser. No. 109,309

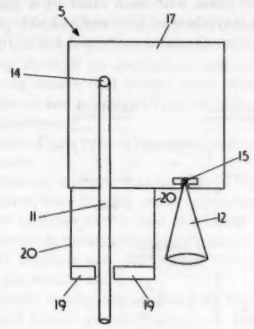
Claims priority, application United Kingdom, Jan. 12, 1979, 7901186

Int. Cl.³ G01N *23/00*; G21K *1/00*

U.S. Cl. 250—359.1 **2 Claims**

1. A method of determining the nature of transported material, comprising the steps of collimating radiation into two beams by positioning shielding around a source of at least two different energies, a lower of said energies being collimated into a fan beam, and a higher of said energies being collimated

into a pencil beam, subjecting the transported material to the beams, detecting with a detector unscattered radiation after passage of the beams through the transported material, and shielding said detector to prevent any substantial interference



of close to surface reactions occuring near the detector surface deriving from the relatively higher energy radiation with detection of the lower energy radiation; and

analyzing from the detected radiation the nature of the transported material.

4,359,640

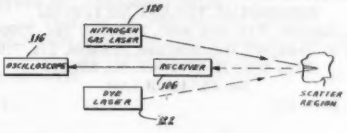
CLEAR AIR TURBULENCE DETECTION

Allen R. Geiger, Las Cruces, N. Mex., assignor to Aero-Geophysical, Inc., El Paso, Tex.

Continuation-in-part of Ser. No. 58,505, Jul. 18, 1979, Pat. No. 4,303,862. This application Feb. 27, 1981, Ser. No. 238,991

Int. Cl.³ G01J *1/42*

U.S. Cl. 250—372 **5 Claims**



1. A system for use in an aircraft for detecting clear air turbulance along the aircraft's flight path comprising:

a. a pair of pulse lasers for generating a pair of coherent beams arranged to converge at a point in front of the aircraft's flight path,

b. receiver means for detecting backscattered radiation produced at said point by said beams and for producing electrical signals related thereto, and

c. display means for displaying said signals.

4,359,641

LIQUID SCINTILLATORS FOR OPTICAL FIBER APPLICATIONS

Larry A. Franks, and Stephen S. Lutz, both of Santa Barbara, Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

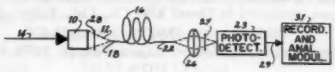
Filed Jun. 1, 1981, Ser. No. 269,287

Int. Cl.³ G01J *1/58;* G09K *11/06*

U.S. Cl. 250—486.1 **6 Claims**

1. A radiation-to-light converter comprising a combination of a fluor solvent and at least one fluor solute, wherein said solute is 1, 2, 4, 5, 3H, 6H, 1 OH, tetrahydro-8-trifluoromethyl (1) benzopyrano (9, 9*a*, 1-gh) quinolizin-10-one.

5. A method of detecting and measuring ionizing radiation comprising exposing to high energy particles a measured solution containing 1, 2, 4, 5, 3H, 6H, 1 OH, tetrahydro-8-tri-



fluoromethyl (1) benzopyrano (9, 9*a*, 1-gh) quinolizin-10-one and transmitting the resulting light pulses through an optical fiber.

4,359,642

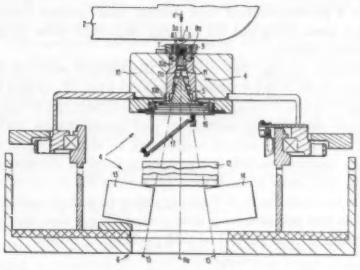
COLLIMATOR ASSEMBLY FOR AN ELECTRON ACCELERATOR

Lothar Heinz, Neunkirchen, Fed. Rep. of Germany; Tony Sie, Walnut Creek, and Robert Burror, Concord, both of Calif., assignors to Siemens Medical Laboratories, Inc., Walnut Creek, Calif.

Filed Jul. 14, 1980, Ser. No. 168,168

Int. Cl.³ A61N *5/10;* G21K *1/02;* H05H *7/00*

U.S. Cl. 378—150 **4 Claims**

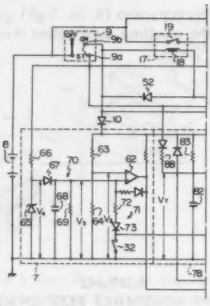


1. In an electron accelerator including a target exposed to an electron beam for the purpose of producing X-ray radiation, a collimator assembly for providing a flattened dose rate characteristic over the central region of the cross-section of the transmitted X-ray beam cone, a collimator shielding block in said collimator assembly for blocking undesired X-rays, at least two inserts comprising a material of high atomic number, one of said inserts being inserted into said collimator shielding block, each of said inserts having a stepped central opening and inner wall surfaces at the margin of the X-ray cone, said inner surfaces having cylindrical annular grooves transverse to the X-ray radiation for providing a dose rate at the margin of the transmitted X-ray radiation cone which is relatively uniform and matched to the dose rate at the central region of the transmitted cone, and means for easily interchanging said inserts in said collimator shielding block, wherein each of said inserts has at least one outer wall having a cylindrical shape, and wherein said means for interchanging said insert comprise a screw thread in said outer wall for inserting the insert into said collimator shielding block in a direction opposite to the direction of radiation.

4,359,643
AUXILIARY APPARATUS FOR STARTING A DIESEL ENGINE

Yoshiharu Tada, and Yoshiaki Abe, both of Higashimatsuyama, Japan, assignors to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Feb. 19, 1980, Ser. No. 122,618
Claims priority, application Japan, Feb. 26, 1979, 54/21612
Int. Cl.³ F02N 17/02
U.S. Cl. 290—38 R 5 Claims



1. An apparatus for use in starting a diesel engine having at least one glow plug energized by actuation of an ignition switch having a first position for connecting said apparatus to a voltage source and a second position for starting the diesel engine, said apparatus comprising:

preheating means responsive to the first position of said ignition switch for passing current to each said glow plug for a predetermined time period, said current being of a first level sufficient for heating each said glow plug relatively quickly;

after-glow means responsive to the second position of said ignition switch for passing a second level of current below said first level for maintaining the temperature of each said glow plug during starting of said diesel engine; and

heat maintenance means responsive to said first position of said ignition switch for passing a level of current below said first level to each said glow plug for maintaining the temperature thereof if said ignition switch should be kept in its first position for a time period longer than said predetermined time period of said preheating means.

4,359,644
LOAD SHEDDING CONTROL MEANS

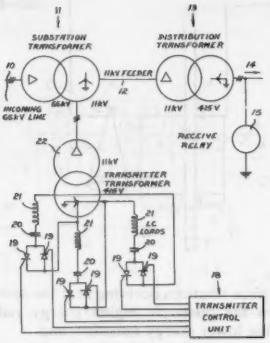
Peter M. Foord, Eastwood, Australia, assignor to The Electricity Trust of South Australia, Eastwood, Australia

Filed Jun. 8, 1979, Ser. No. 46,846
Claims priority, application Australia, Jun. 9, 1978, PD 4651
Int. Cl.³ H04B 3/54
U.S. Cl. 307—40 5 Claims

1. Electrical load control means for transmitting information for example for control of a load in an alternating current electrical power distribution system having a power frequency, comprising:

a transmitter comprising an inductive-capacitive load directly coupled to the system which derives power solely from the system and generates a signal the frequency of which is synthesised from and locked to the power frequency, and which superimposes said signal upon the power frequency waveform as a sequence of waveform distortions, said transmitter also comprising a frequency synthesiser which multiples said power frequency by a first integer and three frequency dividers which divide said multiplied frequency by respective further integers each of which is smaller than said first integer and which provide three separate signal frequencies which form a frequency shift code system,

a receiver also coupled to the system, said receiver having a detector circuit comprising a pair of correlators driven 90 degrees out of phase with each other by a control frequency which is synthesised from and locked to the power frequency and synchronous with said signal frequency,

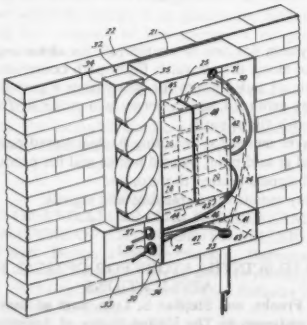


such that a signal input to the correlators appears as a DC voltage output thereof, a squaring circuit coupled to the signal output of each correlator and a summing circuit coupled to the squaring circuits, so arranged as to square and sum the DC voltage outputs of said correlators and thereby provide a voltage resultant independent of phase angle.

4,359,645
ELECTRICAL CONVERSION APPARATUS FOR INDIVIDUAL TENANT METERING

Ezra L. Schacht, P.O. Box 8367, Houston, Tex. 77004, and Barry E. Spain, 405 Westmoreland, Houston, Tex. 77006

Filed Mar. 22, 1978, Ser. No. 889,019
Int. Cl.³ H02B 1/04
U.S. Cl. 307—113 1 Claim



1. An improved method for metering separately the electrical energy supplied to individual occupants in apartment houses and the like, said energy having been previously metered through a single meter, and distributed to several apartments or the like through a single feeder and single panelboard enclosure having a main circuit breaker, branch circuit conductors, and breakers for all branch circuits to several apartments or the like, grouped in said panelboard, the improvement comprising:

removal of said main breaker and said branch circuit breakers from said panelboard enclosure;

installation adjacent to said panelboard enclosure of metering means having conductors for individual apartments or the like;

rerouting of said feeder through said panelboard enclosure along the inside perimeter of said enclosure, said feeder passing through an aperture in said enclosure into said metering means, said feeder being isolated from the remainder of said panelboard enclosure by a barrier forming a compartment;

installation of new branch circuit breakers in said panelboard enclosure;

installation of multiple bussing means in said panelboard enclosure, said bussing mens separately connectable to supply conductors for said individual apartments from said metering means and reconnectable to said new branch circuit breakers and said branch circuit conductors for said apartments; and

said multiple bussing means, said new branch circuit breakers, said branch circuit conductors, and said conductors from said metering means, all grouped in a portion of said panelboard enclosure isolated by said barrier from said compartment through which said feeder conductor passes to said metering means.

4,359,646

INTRUSION DETECTING SWITCH

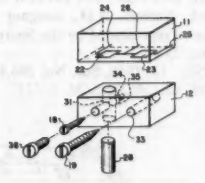
Ezequiel Mejia, Longuevil; Peter S. Minaki, La Prairie, and Walter D. Weind, Westmount, all of Canada, assignors to Honeywell Inc., Minneapolis, Minn.

Filed Jan. 15, 1981, Ser. No. 225,239

Claims priority, application Canada, Jan. 22, 1980, 344131

Int. Cl.³ G08B *13/08, 13/24*

U.S. Cl. 307—116 **17 Claims**



1. An intrusion detecting apparatus for detecting intrusions into an enclosure comprising:

first housing means attached to a wall of the enclosure;

second housing means attached to a closure member of the enclosure and in proximity to said first housing means;

Hall effect sensing means contained in one of said housing means, said Hall effect sensing means being connected in a circuit for supplying power thereto and for providing an output therefrom;

magnetic means contained in the other of said housing means for controlling said output of said Hall effect sensing means dependent upon the relative proximity of said Hall effect sensing means to said magnetic means; and

a mounting device for mounting said other of said housing means to said enclosure so that said magnetic means must be removed before said other of said housing means can be removed from said enclosure.

4,359,647

MASTER-SLAVE FLIP-FLOP ARRANGEMENT

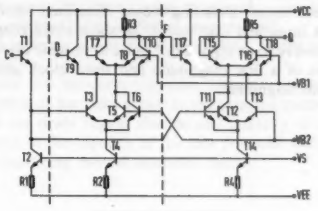
Wolfgang Trinkl, Dachau-Mitterndorf, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Apr. 18, 1979, Ser. No. 31,310

Claims priority, application Fed. Rep. of Germany, May 16, 1978, 2821231

Int. Cl.³ H03K *5/00*

U.S. Cl. 307—238.1 **20 Claims**



1. In a clock-controlled storage arrangement of the type containing master and slave flip-flop storage elements each comprising, in upper and lower levels, series-coupled current switches, each having emitter-coupled transistors, and in which, in each storage element, a lower level clock-controlled current switch includes a transistor comprising a collector circuit, said collector circuit connected to an upper level current switch having a data input, the improvement therein comprising

displacement means for displacing the switching thresholds of the storage elements including parallel-connected transistors in at least one of the lower current switches of the master and slave flip-flop storage elements,

said displacement means comprising shift means connected to each of the lower current switches for providing shift-displaced control pulses including a plurality of parallel-connected transistors having common base, collector and emitter terminals and a diode-operating device connected in parallel with said common base and said common emitter terminals.

13. A clock-controlled data storage arrangement comprising:

a plurality of constant current sources;

a plurality of resistors;

a master flip-flop and a slave flip-flop including a master data input, a master data output, a slave data input connected to said master data output, a slave data output, a master clock input and a slave clock input,

each of said flip-flops comprising first, second, third, fourth, fifth and sixth transistors each including a base, a collector and an emitter with said bases of said second and third transistors being common thereto and said collectors of said second and third transistors being common thereto,

said base of said first transistor connected to the respective data input, said collector of said first transistor connected to a first potential and said emitter of said first transistor connected to said emitter of said second transistor and to said collector of said fifth transistor,

said common collector of said second and third transistors connected to said base of said fourth transistor, to the respective data output and via one of said resistors to the first potential, said base of said second transistor connected to a second potential,

said collector of said fourth transistor connected to the first potential and said emitters of said third and fourth transistors connected to said collector of said sixth transistor,

said emitters of said fifth and sixth transistors connected to a third potential via a respective one of said constant current sources,

said base of said sixth transistor of said master flip-flop con-

nected to a fourth potential and said base of said fifth transistor of said master flip-flop constituting said master clock input,

said base of said fifth transistor of said slave flip-flop connected to a fifth potential an said base of said sixth transistor of said slave flip-flop constituting said slave clock input; and

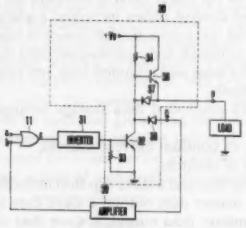
clock means including a clock input for receiving clock pulses, a master clock output connected to said master clock input and a slave clock output connected to said slave clock input,

said clock means including means connected between said clock input and said master an slave clock outputs and responsive to an input clock pulse to provide master clock pulses of a first magnitude and slave clock pulses of a second magnitude.

4,359,648
PULSE SIGNAL CONTROL CIRCUITS

Hiroshi Hada, and Tsutomu Hirayama, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Japan

Filed Sep. 19, 1978, Ser. No. 943,730
Claims priority, application Japan, Sep. 21, 1977, 52-114208
Int. Cl.³ H03K *17/60*
U.S. Cl. 307—254 **6 Claims**

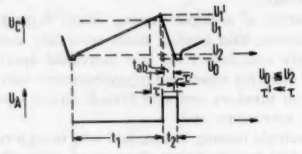


1. A pulse signal control circuit comprising first and second transistors, a first diode connected between the emitter and base electrodes of said first transistor, said first diode having a polarity opposite to the diode characteristic between said emitter and base electrodes, a resistor having a high resistance connected between the collector and base electrodes of said first transistor, a source of first reference potential connected to the collector electrode of said first transistor, means for connecting the collector electrode of said second transistor to the base electrode of said first transistor and to a second diode, a second source of second reference potential connected to the emitter electrode of said second transistor, a source of high frequency pulse signal connected to the collector electrode of said second transistor through said second diode, a source of a pulse data signal containing a high frequency pulse signal synchronous with said first mentioned high frequency pulse signal and connected to the base electrode of said second transistor for producing an amplified output pulse data signal containing a high frequency pulse signal corresponding to the data input signal on the emitter electrode of said first transistor.

4,359,649
MONOLITHICALLY INTEGRABLE SQUAREWAVE PULSE GENERATOR

Gerald Mündel, Glonn, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Mar. 28, 1980, Ser. No. 134,880
Claims priority, application Fed. Rep. of Germany, Mar. 29, 1979, 2912492
Int. Cl.³ H03K *5/01*
U.S. Cl. 307—268 **10 Claims**

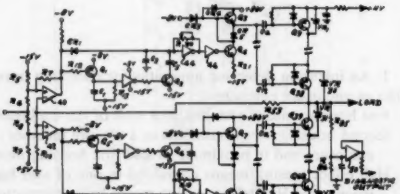


1. In a monolithically integrable squarewave pulse generator having a capacitor acted upon by two bucking constant-current sources, the capacitor having one terminal connected to the two constant-current sources as well as to a non-inverting input of an operational amplifier connected as a Scmitt trigger, and the capacitor having another terminal tied to reference potential, one of the constant-current sources being operative for charging the capacitor, the improvement comprising a third current source in the form of a transistor being normally off and having an electrode connected to the one capacitor terminal connected to the two constant-current sources and a base and an auxiliary voltage source connected to the base of the said third current source transistor for firing said third current source transistor during the discharge period of the capacitor because of the difference in potential between the base thereof and the capacitor, the Schmitt trigger having an output connected to signal output of the squarewave pulse generator.

4,359,650
HIGH VOLTAGE DRIVER AMPLIFIER APPARATUS

Robert E. Newcomb, Nashua, N.H., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Nov. 13, 1980, Ser. No. 206,415
Int. Cl.³ H03K *3/26, 5/153*
U.S. Cl. 307—270 **9 Claims**



1. A high voltage driver amplifier apparatus comprising in combination:

a deadband unit to receive an input signal, said deadband unit providing a deadband over a predetermined voltage range,

a first comparator means having a positive input, a negative input and an output, said positive input connected to said

deadband unit, said first comparator means receiving said input signal at said positive input, said first comparator means providing a comparator output signal,

a first gated oscillator means connected to said first comparator means to receive said comparator output signal therefrom, said first gated oscillator means providing a clock pulse signal with a predetermined frequency,

a first high voltage switch means receiving said clock pulse signal from said first gated oscillator means, said first high voltage switch means connected between a positive high voltage source and a load source, said first high voltage switch means applying said positive high voltage to said load source in response to said clock pulse signal,

a second comparator means having a positive input, a negative input and an output, said negative input connected to said deadband unit, said second comparator means receiving said input signal at said negative input, said second comparator means providing a comparator output signal,

a second gated oscillator means connected to said second comparator means to receive said comparator output signal therefrom, said second gated oscillator means providing a clock pulse signal with a predetermined frequency,

a second high voltage switch means receiving said clock pulse signal from said second gated oscillator means, said second high voltage switch means connected between a negative high voltage source and said load source, said second high voltage switch means applying said negative high voltage to said load source in response to said clock pulse signal, and,

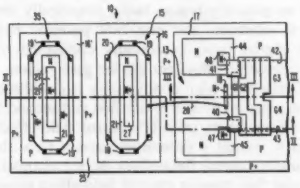
a feedback network connected from between said first and second high voltage switch means, and said load source to ground, said feedback network providing a feedback signal, said feedback signal being applied to said negative input of said first comparator means and to said positive input of said second comparator means.

4,359,651

ANTI-BLOOMING INPUT STRUCTURE FOR CHARGE TRANSFER DEVICE

Nathan Bluzer, Silver Spring, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 21, 1980, Ser. No. 198,905
Int. Cl.³ H03K *3/42*; G11C *19/28*; H01L *29/78, 27/14*
U.S. Cl. 307—311 **10 Claims**



1. In a charge transfer device for storing and transferring charge packets from the potential well to another along a channel of one conductivity type of semiconductor material that overlays a body of opposite type semiconductor material and having a plurality of gate electrodes adjacent one end of the channel, each defining a potential well, and including a bi-polar injection transistor having a collector region constituting a portion of the transfer channel adjacent one of the potential wells and a base region forming a PN junction with a portion of the channel region constituting the collector, and an emitter region spaced from the channel region and forming a PN junction with the base region, and further including a partitioning transistor having a base common with the injection transistor and a collector disconnected from the collector of the junction transistor, the emitter base junction area associated with a collector of the partitioning transistor being of predetermined size relative to the base emitter junction area associated with the collector of the injection transistor, the improvement of

a blooming control electrode means spaced from the emitter region of the injection transistor adjacent one of the gate electrodes,

a blooming control drain region of the same conductivity type as the channel region but more heavily doped underlying at least a portion of the blooming control electrode means,

means to bias the blooming control electrode means more negative than the adjacent gate electrode and to apply a voltage to the drain region to provide a predetermined potential sufficient to attract carriers, and

means to apply an electrical input signal to the emitter regions,

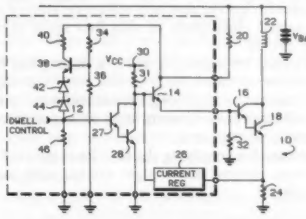
whereby the injection transistor injects a predetermined fraction of the input signal to the charge transfer channel and the drain region absorbs any quantity of charge in excess of the capacity of the first potential well adjacent the blooming control electrode means.

4,359,652

OVER VOLTAGE DETECTION CIRCUIT FOR USE IN ELECTRONIC IGNITION SYSTEMS

Robert B. Jarrett, Tempe, and James J. LoCascio, Mesa, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 7, 1980, Ser. No. 166,865
Int. Cl.³ H03K *5/153*; H02H *3/20*
U.S. Cl. 307—350 **6 Claims**



1. In a monolithic electronic ignition system including a series driver transistor, an over voltage detection circuit for sampling the magnitude of a voltage appearing at the collector of the series driver transistor for producing an output signal that can be utilized to render the series driver transistor nonconductive whenever the magnitude appearing at the collector thereof exceeds a predetermined level, comprising:

voltage translation means for translating the magnitude of the voltage appearing at the collector of the series driver transistor to a second level;

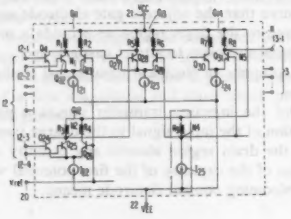
a sampling transistor having base, emitter and collector electrodes, said base being connected to said voltage translation means, said collector being coupled to the collector of the series driver transistor, said sampling transistor being rendered conductive when said translated voltage exceeds a predetermined threshold level; and

circuit means coupled between said emitter of said sampling transistor and an output of the over voltage detection circuit for providing the output signal thereat when said sampling transistor is rendered conductive.

4,359,653
INTEGRATED CIRCUIT HAVING A PLURALITY OF CURRENT MODE LOGIC GATES

Suzuki Takamasa, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Jun. 27, 1980, Ser. No. 163,891
Claims priority, application Japan, Jun. 28, 1979, 54-81902
Int. Cl.³ H03K *19/087, 19/092, 19/003*
U.S. Cl. 307—455 **14 Claims**



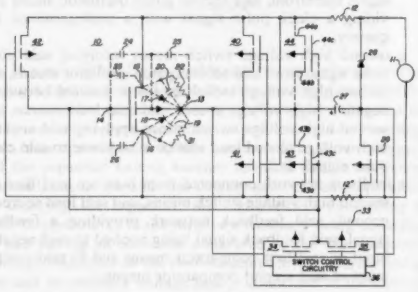
1. An integrated circuit comprising:
an input terminal for receiving an input logic signal having a first high level and a first low level;
a reference voltage terminal for receiving an external reference voltage generated outside the integrated circuit, said reference voltage being intermediate in value between the levels of said input signal;
a first stage current mode logic circuit including first and second input points for generating an internal logic signal having a second high level and a second low level, the voltage difference between said second logic levels being different from the voltage levels between said first levels;
an internal stage current mode logic circuit including first and second input points;
an internal reference voltage generator circuit for generating an internal reference voltage having a value intermediate between the levels of said internal logic signal;
first means for connecting said reference voltage terminal to the second input point of said first stage current mode logic circuit;
second means for supplying the first input point of said first stage current mode logic circuit with said input signal;
third means for supplying the second input point of said internal stage current mode logic circuit with said internal reference voltage; and
fourth means for supplying the first input point of said internal stage current mode logic circuit with said internal logic signal.

4,359,654
ALTERNATING POLARITY POWER SUPPLY CONTROL APPARATUS

Louis H. Buckendorf, Plymouth, and Marc D. Hartranft, Brooklyn Park, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Jan. 28, 1980, Ser. No. 116,052
Int. Cl.² H03K *17/60;* **H01L** *29/72*
U.S. Cl. 307—571 **18 Claims**

1. An electronic switching circuit for controlling transfer of electrical power from an alternating polarity electrical power supply means to a load means, said switching circuit comprising:
a first transfer control field-effect device provided in and on a first substrate, said first transfer control field-effect device comprising:
a first transfer control field-effect device channel region located at least in part in a first selected region of said first substrate;
first transfer control field-effect device first and second terminating regions, separated by said first transfer control field-effect device channel region into which and out of which primary currents through said first field-effect device can, at least in part, pass upon electrical energization of said first transfer control field-effect device first and second terminating regions, said first field-effect device first terminating region being electrically connected to a first terminal means adapted for electrical connection to a first circuit portion arrangement which includes both said alternating polarity electrical power supply means and said load means, said first field-effect device second terminating region being electrically connected to a second terminal means adapted for electrical connection to said first circuit portion arrangement; and
a first transfer control field-effect device gate region capable of affecting, upon electrical energization thereof, any current flow occurring through said first transfer control field-effect device channel region as a result of electrical energization of said first transfer control field-effect device first and second terminating regions; and



a first parasitic bypass means having first and second terminating regions and having a control region therein by which said first parasitic bypass means is capable of being directed to effectively provide a conductive path of a selected conductivity between said first parasitic bypass means first and second terminating regions, said first parasitic bypass means first terminating region being electrically connected to one of said first transfer control field-effect device first and second terminating regions, said first parasitic bypass means second terminating region being electrically connected to said first substrate, and said first parasitic bypass means control region being electrically connected to said first transfer control field-effect device gate region, whereby a path of relatively high conductivity is established between said first parasitic bypass means first and second terminating regions if said first transfer control field-effect device is directed to permit a substantial current flow through said first transfer control field-effect device channel region between said first transfer control field-effect device first and second terminating regions.

4,359,655
TIMER CIRCUIT

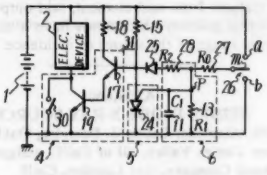
Hisao Fukui, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed May 7, 1980, Ser. No. 147,341
Claims priority, application Japan, May 10, 1979, 54-57375
Int. Cl.³ H03K *5/13, 5/159*
U.S. Cl. 307—595 **13 Claims**

1. A timer circuit for connecting a DC voltage source to an electric device comprising;
switching means adapted to be connected between said source and said device and having conductive and non-conductive states;
drive means for said switching means having a control input and being operative to selectively establish said states of

the switching means in response to a control voltage applied to said control input;

timing means for holding a voltage level that initially decays at a first decay rate through a first discharge path from a first voltage related to the voltage of said source to a second voltage and subsequently decays at a second decay rate through a second discharge path from said second voltage to a third voltage; and



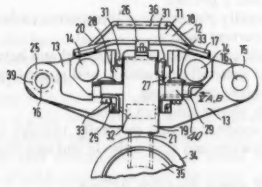
means for providing said control voltage to said control input of the drive means to cause the latter to establish one of said states of the switching means when said voltage level is above said third voltage and to establish the other of said states when said voltage level has decayed to said third voltage.

4,359,656

VOLTAGE REGULATOR FOR GENERATORS

Henning Fasterding, Markgröningen; Herbert Franz, Stuttgart, and Gerhard Walker, Möglingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Nov. 7, 1980, Ser. No. 204,740
Int. Cl.³ H02K *11/00*
U.S. Cl. 310—68 R **7 Claims**



1. A voltage regulator for a generator suitable for vehicular service having its circuit components contained within a casing similar to a transistor casing, and being combined on a common base member with a brush holder and further being provided with connections at least for a negative lead, a generator exciter winding lead and a positive lead, further comprising the improvement which consists in that:

said casing (11) is mounted on a flat plate (13) having circularly cylindrical mounting eyes (15) and formed integrally with and adjacent to the brush holder (19);

bus strips are provided for electrical connection of terminals of the voltage regulator and brushholder;

a metallic bushing (39) is set within one of said eyes and connects with said negative voltage supply bus strip (27), and

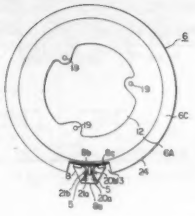
said positive voltage supply bus strip (27) connects with a terminal in the form of a pressure contact (40).

4,359,657

ROTATION SPEED SIGNAL DETECTOR

Hisayuki Matsumoto; Seiichi Ushijima, both of Hirakata; Susumu Kinoshita, Katano, and Masaki Suzuki, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 28, 1980, Ser. No. 153,939
Claims priority, application Japan, Jun. 4, 1979, 54/70319
Int. Cl.³ H02K *13/00*
U.S. Cl. 310—156 **5 Claims**



1. A rotation speed signal detector comprising:

a cylindrical rotor magnet having an array of n magnetic poles magnetized on one circumferential surface of said cylinder along the peripheral direction and an array of m (m>n) magnetic poles magnetized on the other circumferential surface of said cylinder along the peripheral direction;

a stator fixed opposite to said array of n magnetic poles of said rotor magnet and having a stator winding for giving a rotational force to said rotor magnet;

a detection coil provided with first and second sets of coil conductors mounted on first and second sides of a flexible insulating sheet, said coil conductors having winding elements at angular positions corresponding to magnetic pole pitches of m poles of said rotor magnet and being connected as a wave winding, the electric phase difference between said first and second sets of coil conductors being equal to π;

a supporting member for supporting said detection coil in a ring form, said detection coil being positioned around said array of m poles of said rotor magnet with the peripheral surface thereof opposite said array of m poles of said rotor magnet with a prescribed gap therebetween;

a terminal base having a main body and a pair of spaced apart contact plates;

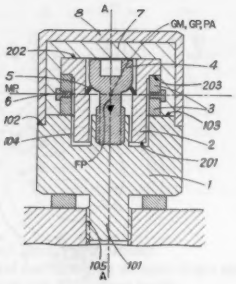
a winding-conductor processing substrate attached to said stator, said substrate having an output circuit for producing a rotational speed signal; and

terminal pin means including first and second pairs of terminal pins embedded in the main body of said terminal base, one end of each of the coil conductors of said detection coil comprising said first and second sets of coil conductors being connected to respective terminal pins of said first pair of terminal pin means in the form of the letter S, and the other ends of said coil conductors being connected to respective terminal pins of said second pair of terminal pin means in the form of an inverted letter S, the ends of said detection coil being passed between the spaced apart contact plates of said terminal base, and the respective terminal pins of said second pair of terminal pins being electrically connected to each other.

4,359,658
PRESTRESSED PIEZOELECTRIC ACCELEROMETER

Jean Cartier, 1, rue de Midori, Les Loges en Josas, France (78350)

Filed Feb. 7, 1980, Ser. No. 119,540
Claims priority, application France, Feb. 9, 1979, 79 03372
Int. Cl.³ H01L *41/08*
U.S. Cl. 310—329 12 Claims

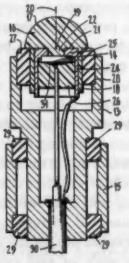


1. An accelerometer device of the springmass type comprising, in a housing having an axis, a hollowed vibrating mass having a recess and being statically and dynamically balanced; spring means including hollow piezoelectric means interposed between the mass and the housing, and a fastening element mounted in the housing; and elastic prestressing means situated in the recess of the vibrating mass between a shoulder of said mass and the fastening element, and wherein the position of the prestressing means with respect to the mass is such that the point of application of the prestressing force and the center of gravity determined by the static and dynamic balancing of the vibrating mass are situated in the same median plane of the piezoelectric means, which plane is transverse and perpendicular to the axis of the housing.

4,359,659
PIEZOELECTRIC SHOCK WAVE DETECTOR

Robert B. Phillips, Hants, England, assignor to Australasian Training Aids (Pty.) Limited, Albury, Australia

Filed Feb. 21, 1980, Ser. No. 123,477
Claims priority, application United Kingdom, Feb. 27, 1979, 7906920
Int. Cl.³ H01L *41/08*
U.S. Cl. 310—335 19 Claims



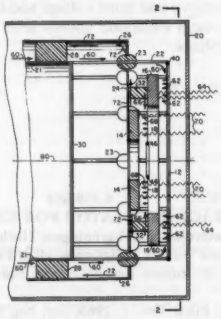
1. A shock or pressure wave detecting transducer assembly for detecting air-borne shock or pressure waves generated on movement of a projectile therepast, said transducer comprising, a head, said head having a front surface to receive shock or pressure waves received over a wide range of angles of incidence of up to approximately 80° with respect to a central axis of the transducer assembly and to transmit them to a point on the rear face, characterized by;

a transducer element mounted behind said head and connected with the rear face of the head by a zone which embraces said point, said zone being substantially smaller in cross sectional area measured perpendicular to the propagation direction through said zone than that of said rear face, the element being responsive to those pressure or shock waves which propagate through said zone, said zone comprising a means for providing polar response signal outputs from said element, said outputs having the same signal polarity and do not have a zero value over said wide range of the angles of incidence.

4,359,660
SERIES DIODE X-RAY SOURCE

Ian D. Smith, Alameda; Laszlo J. Demeter, Oakland, and Kurt E. Nielsen, Castro Valley, all of Calif., assignors to Physics International Company, San Leandro, Calif.

Filed Dec. 15, 1980, Ser. No. 216,165
Int. Cl.³ H01J *35/00*
U.S. Cl. 378—119 10 Claims



1. A multiple cathode X-ray source comprising

means for generating electrical energy having a current source and a ground,

a first generally planar X-ray transparent cathode connected to said current source,

a first anode connected to said ground and having its surface disposed generally parallel to and spaced apart from said first cathode comprising

a generally planar tungsten surface,

a second anode disposed generally parallel to and spaced apart between said first cathode and said first anode comprising

a generally planar tungsten surface,

a second generally planar X-ray transparent cathode electrically connected to said second anode and disposed parallel to and spaced apart between said first cathode and said first anode, and

means defining an evacuated housing enclosing said anodes and said cathodes.

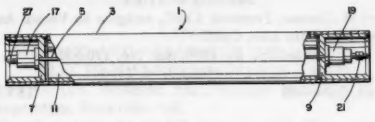
4,359,661
GEIGER-MUELLER TUBE WITH TUNGSTEN LINER

Nicolas Mitrofanov, Cleveland, Ohio, assignor to The Harshaw Chemical Company, Cleveland, Ohio

Filed Aug. 29, 1980, Ser. No. 182,375
Int. Cl.³ H01J *47/08, 17/06*
U.S. Cl. 313—93 2 Claims

1. In a Geiger-Mueller radiation detector including a relatively large surface stainless steel cathode, a coating of chromium oxide on the interior surface of said cathode, an anode disposed in spaced apart relationship to said cathode in a sealed chamber, and a gaseous mixture confined in said sealed cham-

ber and including an inert gas and a minor amount of a halogen quench gas, the improvement comprising a liner in contact

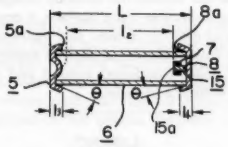


with the chromium oxide layer and consisting of a thin metallic tungsten foil.

4,359,662
FLASH DISCHARGE LAMP

Yasuo Onishi, Himeji, Japan, assignor to Ushio Denki Kabushikikaisha, Tokyo, Japan

Filed Mar. 14, 1980, Ser. No. 130,534
Claims priority, application Japan, Jul. 11, 1979, 54-86939
Int. Cl.³ H01J *17/18, 17/04*
U.S. Cl. 313—213 **24 Claims**



1. A flash discharge lamp comprising:

a glass cylinder having an outer surface and having first and second open ends;

a continuous cathode metal cap, having a disc portion and having a sealing wall extending from said disc portion at an angle thereto, said first open end of said glass cylinder sealed to said continuous cathode metal cap, said disc portion of said continuous cathode metal cap having an inner face and an outer face;

a continuous anode metal cap, having a disc portion and having a sealing wall extending from said disc portion at an angle thereto, said second open end of said glass cylinder sealed to said continuous anode metal cap, said disc portion of said continuous anode metal cap having an inner face and an outer face;

an intermediate member, having a free end, extending from said inner face of said disc portion of said continuous cathode metal cap;

a cathode material member extending from the free end of said intermediate member such that said intermediate member and said cathode material member are positioned inside said glass cylinder; and

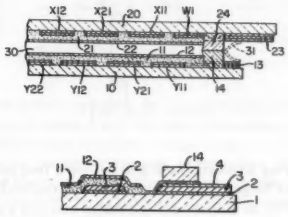
an adhesive material filled in the gap between the outer surface of said glass cylinder and the sealing walls of said continuous anode and cathode metal caps,

wherein a discharge is generated between said continuous anode metal cap and said cathode material member.

4,359,663
GAS DISCHARGE PANEL HAVING PLURALITY OF SHIFT ELECTRODES

Tsutae Shinoda, Akashi; Shizuo Andoh, Kobe; Yoichi Ueda, Hyogoken, and Yoshinori Miyashita, Hyogo, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 885,962, Mar. 13, 1978, abandoned.
This application Oct. 5, 1979, Ser. No. 82,320
Claims priority, application Japan, Mar. 11, 1977, 52-27399
Int. Cl.³ H01J *17/49, 17/04*
U.S. Cl. 313—217 **9 Claims**



8. In a substrate assembly for a gas discharge panel comprising a glass substrate, an electrode arrangement of electrodes having edges formed on said glass substrate, said electrode arrangement having a specified electrode pattern, the improvement comprising:

a dielectric layer coated on said electrode arrangement, said electrode arrangement comprising a double layer structure comprising a first layer formed on said glass substrate and a second layer which is conductive and formed on said first layer, wherein said dielectric layer is uniform as a result of being evaporated on said second layer, and the edge of each said electrode of said electrode arrangement as covered by said dielectric layer having a maximum average gradient angle of 60° with respect to the surface of the respective substrate on which it is formed; and

said electrode arrangement further comprising a terminal portion which comprises an additional conductive layer formed on said second layer.

4,359,664
METHOD OF MOUNTING A CATHODE AND EYELET FOR USE THEREWITH

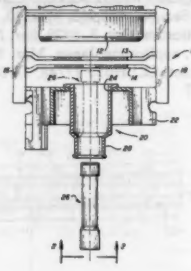
Floyd K. Collins, and Thaddeus V. Rychlewski, both of Seneca Falls, N.Y., assignors to North American Philips Consumer Electronics Corp., New York, N.Y.

Filed Jul. 2, 1980, Ser. No. 165,322
Int. Cl.³ H01J *1/94, 19/48*
U.S. Cl. 313—270 **4 Claims**

1. A method for inserting a cylindrical cathode into a cathode eyelet and fixing said cathode thereto, said eyelet being of a material having an elastic limit and having a first part which is substantially circular in cross-section and having a diameter larger than the diameter of said cathode and a second part which is substantially elliptical in cross-section and having a major axis which is larger than the diameter of said cathode and minor axis which is smaller than the diameter of said cathode, said method comprising the steps of: applying pressure inwardly across said major axis to compress the same while simultaneously enlarging said minor axis to a size which is larger than said cathode diameter, said pressure not to exceed the elastic limit of the material; inserting said cathode into said eyelet a desired distance; releasing said pressure on said major axis whereby said minor axis contracts until the sides of

said second part frictionally engage said cathode; and fixing said cathode to said eyelet.

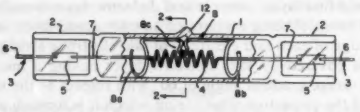
4. An eyelet for mounting a cathode cylinder of given diameter, said eyelet comprising: a hollow, tubular body of a material having an elastic limit and having a first part defined by a diameter larger than said given diameter; and a second part defined by an ellipse having a major axis and a minor axis, said major axis being larger than said given diameter and said minor axis being smaller than said given diameter.



4,359,665
FILAMENT SUPPORT FOR TUBULAR LAMP

Merle E. Morris, Lexington, and Steven L. Meade, Winchester, both of Ky., assignors to GTE Products Corporation, Stamford, Conn.

Filed Jul. 2, 1980, Ser. No. 165,308
Int. Cl.³ H01J *1/96, 19/50;* **H01K** *1/18*
U.S. Cl. 313—274 . **7 Claims**



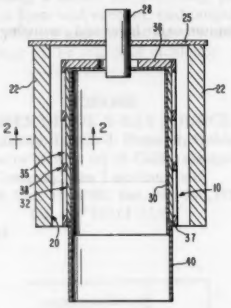
1. In an electric incandescent lamp of the double-ended type including a tubular envelope sealed at each end thereof, a helically coiled filament extending longitudinally through the interior of said envelope, and lead-in conductors connected at respective ends of said filament and hermetically sealed in said respective end seals of said envelope and extending exteriorly thereof, the improvement comprising:

a filament support in the form of a wire including a midportion and a pair of opposing end portions, said filament support extending longitudinally along a portion of the inner wall of said envelope, each of said end portions of said support wire terminating in a loop which is circumferentially engageable with the inner wall of said envelope around at least one-half of the circumference thereof, said midportion of said support wire extending laterally in the form of a single, substantially closed loop enclosing and embracing a localized point on a turn of said coiled filament so that said turn extends through said midportion loop and is supported therefrom, each of said end loop portions of said support wire being compressed prior to insertion within said envelope such that when said end loop portions are positioned within said envelope, a slight pressure is applied thereto by said internal wall of said envelope, said end loop portions in turn assisting to maintain said single loop of said midportion in said substantially closed form to assure a firm grip by said single loop on said filament.

4,359,666
CYLINDRICAL CATHODE WITH SEGMENTED ELECTRON EMISSIVE SURFACE AND METHOD OF MANUFACTURE

Robert N. Tornoe, Fremont, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

Filed Jul. 21, 1980, Ser. No. 170,350
Int. Cl.³ H01J *1/46, 21/10*
U.S. Cl. 313—302 **13 Claims**



1. A method of fabricating a cylindrical cathode with a segmented external surface with electron emitting and nonemitting areas, said method comprising the steps of:

fabricating an inner structure having a cylindrically-shaped thermionic electron emitting surface and an apertured cylindrical shell which can slideably contain said electron emitting surface, and

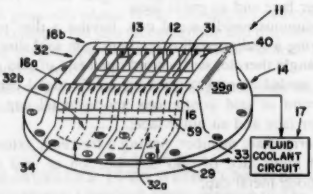
sliding said shell over said electron emitting surface.

12. A cylindrical segmented cathode comprising a support member having a circular outer surface, a coating of electron emissive material entirely around said outer surface, an apertured slideably fitted cylindrical shell of nonemissive material, and said shell being positioned around and electricaly connected to said emissive material.

4,359,667
CONVECTIVELY COOLED ELECTRICAL GRID STRUCTURE

James A. Paterson, and Gary W. Koehler, both of Oakland, Calif., assignors to The United States of America as represented by the Department of Energy, Washington, D.C.

Filed Nov. 10, 1980, Ser. No. 205,077
Int. Cl.³ H01J *1/16, 7/26*
U.S. Cl. 313—348 **16 Claims**



1. In a fluid cooled electrical grid having a plurality of electrical conductors spaced apart to define a plurality of openings through the grid and having conductor support means for supporting said conductors while enabling axial extension and contraction thereof in response to temperature changes, the improvement comprising:

said conductors having internal flow passages which extend

therewithin and wherein said grid includes convective cooling means for directing a flow of fluid coolant through said internal flow passages of said conductors.

4,359,668

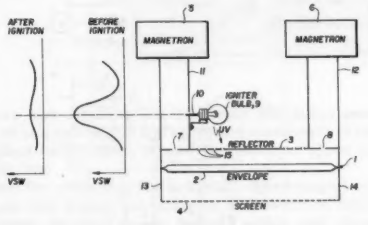
METHOD AND APPARATUS FOR IGNITING ELECTRODELESS DISCHARGE LAMP

Michael G. Ury, Bethesda, Md., assignor to Fusion Systems Corporation, Rockville, Md.

Continuation of Ser. No. 20,457, Mar. 14, 1979. This application Jul. 15, 1981, Ser. No. 283,701

Int. Cl.³ H01J *7/46, 19/80*

U.S. Cl. 315—39 **9 Claims**



1. Apparatus for igniting a microwave generated light source which is comprised of a plasma forming medium-containing envelope made of a transparent material, microwave source means, and microwave coupling means for coupling the microwave energy emitted by said source means to said envelope comprising,

ultraviolet source means for emitting ultraviolet light when excited,

means for extracting microwave energy from said microwave coupling means and for coupling it to said ultraviolet source means to excite said ultraviolet source means,

said ultraviolet source means being positioned so as to irradiate said envelope with said emitted ultraviolet light, thus causing ignition of the plasma forming medium in said envelope.

9. Apparatus for igniting a microwave generated light source comprising,

a plasma forming medium-containing envelope made of a transparent material,

microwave source means,

ultraviolet source means for emitting ultraviolet light when excited,

means for coupling microwave energy which is emitted by said microwave source means to said plasma forming medium-containing envelope and to said ultraviolet source means for exciting it,

said ultraviolet source means being positioned so as to irradiate said envelope with said emitted ultraviolet light, thus causing ignition of the plasma forming medium in said envelope.

4,359,669

LAMP MODULATING CIRCUITRY

Thomas E. Anderson, South Euclid, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 22, 1980, Ser. No. 219,003

Int. Cl.³ H05B *37/02, 41/44*

U.S. Cl. 315—208 **21 Claims**

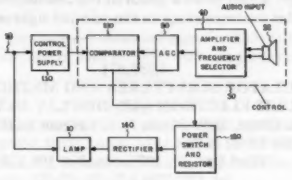
1. Audio-modulated switching circuitry for controlling the intensity of light emitted by a light source, comprising:

(a) an audio input;

(b) a filter for filtering signals received from the audio input within a predetermined low audio frequency range;

(c) an amplitude demodulator for receiving signals received from the filter and for transmitting signals proportional to the peak amplitude of the signals received from the filter;

(d) an automatic gain control for detecting instantaneous and average signals received from the amplitude demodulator and thereafter generating signals representative of the detected instantaneous and average signals;



(e) a comparator for comparing the signals received from the automatic gain control and thereafter generating either a high voltage output or a low voltage output; and

(f) a switching means connected intermediate the light source and the comparator, the switching means causing the light output of the light source to vary in response to changes in signals received from the comparator.

4,359,670

LAMP INTENSITY CONTROL APPARATUS COMPRISING PRESET MEANS

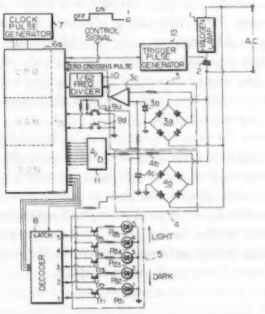
Masao Hosaka, and Nobuyuki Yanagawa, both of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Oct. 27, 1980, Ser. No. 200,689

Claims priority, application Japan, Nov. 1, 1979, 54-141653

Int. Cl.³ H05B *39/08*

U.S. Cl. 315—307 **7 Claims**



1. A power supply apparatus for applying power to a lamp, characterized by comprising:

input means for designating a selected light intensity of the lamp;

display means for displaying the selected light intensity;

control means for controlling an effective voltage applied to the lamp in such a manner that the lamp produces the selected light intensity;

preset means for, when power is initially applied to the apparatus, presetting the input means to designate a predetermined selected light intensity, the input means being thereafter manually operable to designate the selected light intensity; and

an A.C. power source for applying said power to the apparatus and switch means connected in series with the lamp across the A.C. power source, the control means being constructed to control the switch means to control the effective A.C. voltage applied to the lamp in such a manner that the lamp produces the selected light intensity;

the switch means comprising a thyristor, the control means being constructed to control a phase angle of a trigger signal applied to the thyristor;

the control means comprises means for detecting a zero-cross point of an A.C. output voltage of the A.C. power source, counter means for counting clock pulses starting from said zero-cross point and means for generating the trigger signal when a count of the counter means reaches a value corresponding to the selected light intensity.

4,359,671

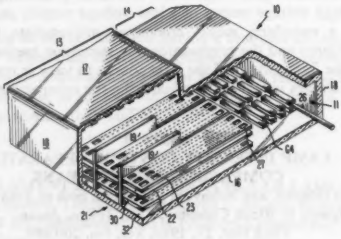
MODULATOR STRUCTURES AND METHODS FOR MULTI-ELECTRON GUN DISPLAY DEVICES

Robert A. Gange, Belle Mead, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 28, 1979, Ser. No. 108,125

Int. Cl.³ H01J *29/70, 29/72*

U.S. Cl. 315—366 **8 Claims**



1. In a display device including an evacuated envelope housing a display section and an electron gun section, said display section including a display surface and a pair of spaced parallel guide meshes for propagating electron beams in a space between said guide meshes and parallel to said display surface, said electron gun section including cathode means for providing electrons, means arranged between said cathode means and said guide meshes for injecting said electrons into said space, an improvement wherein:

said means for injecting electrons includes a plurality of pairs of electrodes arranged to receive said electrons from said cathode means and input said electrons to said space between said guide meshes, at least two of said pairs of electrodes being biased with fixed voltages and one pair of said electrodes being biased with a varying voltage, said cathode being arranged between the pair of electrodes furtherest from said guide meshes.

4,359,672

MOTOR STARTER WITH OPTICALLY COUPLED PUSHBUTTON STATION

John S. Hart, Racine, Wis., assignor to Allen-Bradley Company, Milwaukee, Wis.

Filed Jul. 10, 1981, Ser. No. 282,006

Int. Cl.³ H04Q *7/02*

U.S. Cl. 318—16 **3 Claims**

1. In a motor control having a line contactor which operates a set of contacts to energize a motor when electric power is applied to the line contactor's coil, the combination comprising:

a first optical receiver connected to said contactor coil and having a set of electrical contacts which are operated when light is received to apply electric energy to said contactor coil;

a first optical transmitter for emitting light when electrical energy is applied;

circuit means including a second set of contacts which are operated by said line contactor to supply electrical energy from a source to said first optical transmitter when the motor is energized;

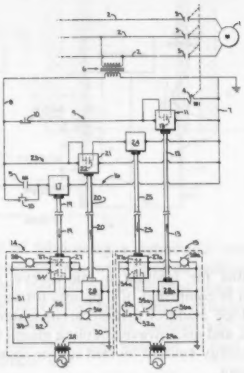
first light coupling means connected to said first optical transmitter for conducting light generated thereby;

second light coupling means connected to said first optical receiver for applying light thereto; and

a remote pushbutton station which connects to said first and second light coupling means and which includes:

(a) a second optical receiver coupled to said first light coupling means and to a source of electrical energy, and having a switch which is operated to conduct electrical energy when light is received through the first light coupling means;

(b) a second optical transmitter connected in circuit with



the switch in said second optical receiver and being operable to generate light in said second light coupling means when said electrical energy is supplied to it;

(c) first circuit means including first switch means connected in circuit with said second optical transmitter for supplying electrical energy from a source to the second optical transmitter when the first switch means is operated; and

(d) second circuit means including second switch means connected in series circuit with the switch in said second optical receiver to supply electrical energy thereto from a source and to interrupt that supply of electrical energy to said switch in the second optical receiver and said second optical transmitter when the second switch means is operated.

4,359,673

ELECTROMAGNETICALLY ACTUATED LINEAR RECIPROCATING SELF-TIMED MOTOR

Augustus T. Bross, Jr., P.O. Box 1553, Alvin, Tex. 77511, and Michael Brown, 19 El Dorado, Friendswood, Tex. 77576

Filed Aug. 21, 1980, Ser. No. 180,180

Int. Cl.³ H02K *33/00*

U.S. Cl. 318—38 **10 Claims**

1. An improved electromagnetically actuated linear reciprocating motor, said motor comprising:

at least two laterally opposed axially spaced relatively fixed end magnet assemblies,

said end magnet assemblies comprising primary and secondary electromagnet coils,

an electromagnetic piston assembly mounted between said end magnet assemblies for reciprocation towards and away from said end magnet assemblies and being in axial alignment therewith, said piston assembly including a piston electromagnet coil,

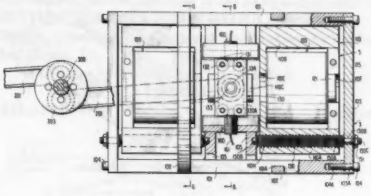
an electrical current source,

means for supplying DC current from said source to said

piston electromagnet coil for setting up a DC magnetic field within said piston,

means responsive to piston assembly reciprocation for periodically connecting said source to said fixed end magnet primary coils for momentarily setting up like magnetic fields between the opposed ends of said piston coils and said end magnet primary coil when said piston coil is near top dead center at the end of its stroke to create momentary high repulsion forces between said piston assembly and said end magnet coil assemblies sequentially to rapidly effect reciprocation of said electromagnet piston assembly, and

means for connecting said secondary electromagnet coils of said end magnet assemblies to said electrical source to return electrical power induced within said secondary coils to said source as a result of movement of said piston assembly.



4,359,674

CONTROL SYSTEM FOR A DC MOTOR

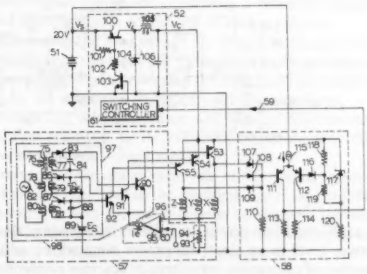
Makoto Gotou, Kadoma, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 21, 1980, Ser. No. 123,473

Claims priority, application Japan, Feb. 22, 1979, 54-20460; Mar. 6, 1979, 54-26385

Int. Cl.³ H02P 5/16

U.S. Cl. 318—318 **4 Claims**



1. A control system for a DC motor comprising:

a permanent magnet rotor having a plurality of N and S poles;

polyphase stator coils provided in the magnetic field of said permanent magnet rotor so as to generate polyphase alternate voltages according to the relative rotation between said permanent magnet rotor and said polyphase stator coils;

a DC voltage source for supplying electric power;

a DC-DC switching converter for producing another voltage from the voltage of said DC voltage source;

drive transistors provided in the paths from said DC-DC switching converter to said polyphase stator coils;

a distribution controller having a position detecting means for detecting the relative position between said permanent magnet rotor and said polyphase stator coils and for activating said drive transistors selectively in correspondence with said relative position, a current detector for detecting a supply current to said polyphase coils, and a current controller for controlling output currents of said drive transistors in each activated period so that current applied to said polyphase stator coils is controlled in correspondence with a command signal; and

a voltage controller for detecting at least one of the voltage drops across said drive transistors in each activated period and for producing a detected signal which controls the output voltage of said DC-DC switching converter.

4,359,675

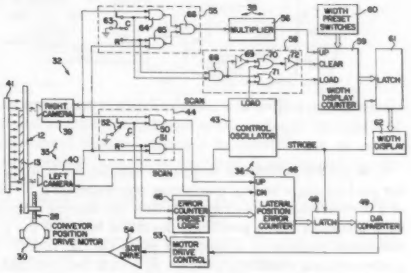
ELECTRICAL CONTROL SYSTEM AND METHOD FOR A TIRE BUILDING MACHINE SERVER

Nick M. Miller, III, Rootstown, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Filed May 7, 1980, Ser. No. 147,644

Int. Cl.³ G05B 19/28

U.S. Cl. 318—603 **42 Claims**



1. A circuit for controlling the position of a material on a conveyor relative to a locus of points of an elastic material on the surface of a building drum having a drum rotation drive motor, the conveyor having both longitudinal and transverse reference axes, a conveyor position drive motor and conveyor drive motor, comprising:

first sensor means for generating an output signal indicative of a position of the material relative to the transverse reference axis and the direction of any motion thereof;

second sensor means for generating an output signal indicative of the position of the locus of points of the elastic material on the surface of the building drum and the direction of any rotation thereof;

third sensor means for generating a pulse train output signal having a number of pulses that is indicative of the position of the material relative to the longitudinal reference axis;

ratio means including rate multiplier means for receiving said output signal from one of said first or said second sensor means and generating an output signal in a preselected proportion thereto;

tracking error correction means receiving said output signal from said ratio means and providing an output signal to the conveyor drive motor whereby the conveyor drive motor maintains the desired position of the material relative to the transverse reference axis and the locus of points of the elastic material on the surface of the building drum;

position error counter means receiving said pulse train output signal from said third sensor means and counting from a preselected number for a count proportional to the number of pulses in said pulse train output signal, the final number in said position error counter means indicative of the necessary correction in the position of the material to maintain a preselected position relative to the longitudinal reference axis; and,

position error correction means receiving said final number

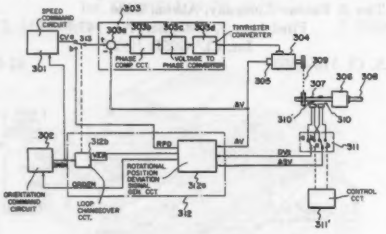
from said position error counter means and providing an output signal to the conveyor position drive motor whereby the necessary correction to return the material to its preselected position relative to the longitudinal reference axis is achieved.

4,359,676

CONTROL SYSTEM FOR STOPPING SPINDLE AT PREDETERMINED ROTATIONAL POSITION

Yoshiki Fujioka, Hino, Japan, assignor to Fujitsu Fanuc Limited, Tokyo, Japan

Filed Dec. 12, 1980, Ser. No. 215,631
Claims priority, application Japan, Dec. 31, 1979, 54-172685
Int. Cl.³ G05B *1/06*
U.S. Cl. 318—653 **8 Claims**



1. A control system for stopping a spindle, for holding a tool for performing a boring machining operation on a workpiece at a predetermined rotational position, for driving a spindle in such a manner that a positional deviation between the present rotational position of a specified point on the spindle and a predetermined rotational position at which the specified point is to be stopped, is reduced to zero, so that the specified point on the spindle is stopped at the predetermined rotational position, said control system comprising:

a first rotational position sensor, mounted on the spindle at a first specified point thereof, for producing a first rotational position deviation signal when the tool is inserted into and withdrawn from the workpiece during the boring machining operation;

a second rotational position sensor, mounted on the spindle at a second specified point thereof, for producing a second rotational position deviation signal during the tool change operation;

changeover means, operatively connected to said first and second rotational position sensors, for selectively outputting the first rotational position deviation signal from said first rotational position sensor and the second rotational position deviation signal from said second rotational position sensor; and

an orientation control circuit, operatively connected to said changeover means, for receiving the one of the first and second rotational position deviation signals selected by said changeover means and for controlling the spindle such that the spindle is stopped at the predetermined rotational position.

4,359,677

LINEAR INDEXER

Jack D. Dennon, Box G, Warrenton, Oreg. 97146

Filed Mar. 2, 1981, Ser. No. 239,627
Int. Cl.³ G05B *11/00*
U.S. Cl. 318—687 **2 Claims**

1. A linear positioner comprising:

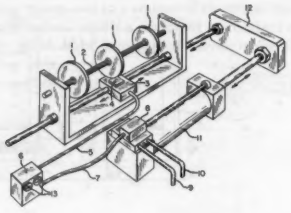
a. a plurality of magnets arranged to create a magnetic field exhibiting one or more discrete regions of direction reversal along the path of

b. a Hall effect magnetic field sensor,

c. means for amplification of the original sensor electrical voltage signals,

d. means for differential combination of said original voltage signals to yield a bipolar current signal exhibiting a null whenever said original voltage signals are of equal sense and magnitude,

e. means for imparting motion upon said sensor relative to



said magnets at a rate proportional to said current, so that said sensor seeks a position where the absolute value of said current is zero; thereby establishing a plurality of discrete preferred positions maintainable under disturbance without external assistance, but including

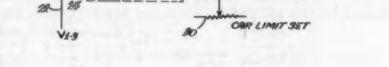
f. means for temporarily overriding said current so as to relocate the position of said sensor from one said preferred position to another said preferred position.

4,359,678

ELECTRONIC REACTIVE POWER REGULATOR

Pertti Raivola, Peltokatu 25 C 45, SF-33100 Tampere 10; Bo Wikstroom, Voiomaankatu 26 as. 26, SF-33300 Tampere 30, both of Finland, and Pellervo Kaskinen, 189 Wallace Rd., Nashville, Tenn. 37211

Filed Apr. 7, 1980, Ser. No. 137,761
Int. Cl.³ G05F *1/70*; H02J *3/18*
U.S. Cl. 323—211 **35 Claims**



1. A reactive power regulator maintaining the reactive power level in an electrical power network by adjusting the number of correction capacitors or reactors connected into the power network, which comprises:

measuring means for measuring the reactive power in the power network comprising at least one multiplier circuit means for receiving from said network at least two input signals having an initial relative phase shift value of 90 degrees when the reactive power is zero but which changes in response to a change in reactive power, and for producing in response to the received input signals an output signal having a characteristic indicative of the existing reactive power;

control signal generating means for comparing said characteristic to reference limits and for producing an increase control signal when one limit is exceeded and a decrease control signal when another limit is exceeded; and

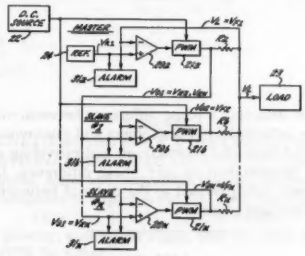
logic means, responsive to said control signals, for selectively incrementally adjusting the number of unequal value correction capacitors or reactors in the electrical

power network in response to said control signals by disconnecting the lowest value capacitor or reactor from the network in response to a decrease control signal, and by connecting the lowest value unconnected capacitor or reactor into the network in response to an increase control signal, to thereby regulate the amount of reactive power.

4,359,679
SWITCHING D-C. REGULATOR AND LOAD-SHARING SYSTEM FOR MULTIPLE REGULATORS

John F. Regan, Lombard, Ill., assignor to Wescom Switching, Inc., Oak Brook, Ill.

Filed Jan. 16, 1978, Ser. No. 869,514
Int. Cl.³ H02M *3/335*
U.S. Cl. 323—272 **10 Claims**



1. A system of parallel switching regulators sharing a common load, each regulator including means for generating controllable pulses from an unregulated d-c. voltage source and then smoothing said pulses to form a d-c. output that varies according to changes in said pulses, a comparator for controlling said pulses according to the differential between a reference signal and a feedback signal, and an output resistor connected between the comparator and the load, said system comprising

a reference signal source for generating a reference signal for said comparator in a first one of said regulators,

means connecting the load side of the output resistor in said first regulator to the feedback signal input to the comparator in said first regulator so that the load voltage is determined by the reference signal for said first regulator,

means connecting the comparator side of the output resistor in said first regulator to the reference signal input to the comparator in said second regulator, and

means connecting the comparator side of the output resistor in said second regulator to the feedback signal input to the comparator in said second regulator so that the current supplied to the load by said second regulator is equal to the current supplied by said first regulator.

4,359,680
REFERENCE VOLTAGE CIRCUIT

James R. Hellums, Carrollton, and Michael B. Terry, Dallas, both of Tex., assignors to Mostek Corporation, Carrollton, Tex.

PCT No. PCT/US81/00699, § 371 Date May 18, 1981, § 102(e) Date May 18, 1981
PCT Filed May 18, 1981, Ser. No. 278,905
Int. Cl.³ G05F *3/20*
U.S. Cl. 323—313 **8 Claims**

1. A circuit for producing a reference voltage comprising:

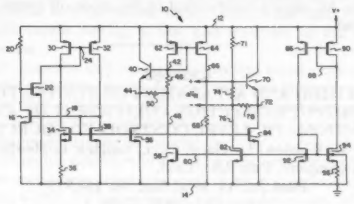
first and second power terminals for providing a supply voltage to said circuit;

means connected to said first and said second power terminals for maintaining a first node at a first voltage which is essentially independent of the amplitude of said supply voltage provided said supply voltage is greater than a preset voltage threshold;

a first bipolar transistor having a first of the emitter and collector terminals thereof connected to said first power terminal;

a second bipolar transistor having a first of the emitter and collector terminals thereof connected to said first power terminal and the base terminal thereof connected to a second node;

means connected to said first node, said second power terminal and a second of the emitter and collector terminals of said first bipolar transistor for establishing an essentially constant emitter current through said first bipolar transistor;



means connected to said first node, said second power terminal and a second of the emitter and collector terminals of said second bipolar transistor for establishing an essentially constant emitter current through said second bipolar transistor;

a first resistor connected between the base and emitter terminals of said first bipolar transistor;

a second resistor connected between the base and emitter terminals of said second bipolar transistor;

a third resistor connected between said second node and said second power terminal;

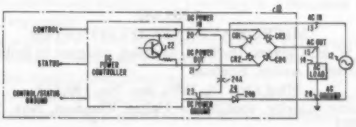
means connected to the base terminal of said first bipolar transistor and to said first power terminal for generating a control current which is supplied to said second node; and

output terminals connected to said second resistor for providing said reference voltage.

4,359,681
ALTERNATING CURRENT POWER CONTROLLER WITH DC TRANSISTOR SWITCHING AND AN INTERNAL DC POWER SUPPLY

Donal E. Baker, American Township, Lima County, and Kenneth C. Shuey, Cridersville, both of Ohio, assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 145,402, May 1, 1980, abandoned. This application Dec. 7, 1981, Ser. No. 328,168
Int. Cl.³ G05F *3/02*
U.S. Cl. 323—320 **4 Claims**



1. A power controller suitable for controlling the supply of power from an AC supply to a load, while having the alternative capability of controlling the supply of power from a DC supply to a load, and comprising:

an AC power input terminal and an AC power output terminal;

rectifier means operatively connected between said AC power input terminal and said AC power output terminal

for converting AC load current to rectified direct current supplied to a pair of DC supply terminals;

filter means connected between one of said DC supply terminals and a DC ground terminal for filtering said direct current from said rectifier means;

DC power controller means comprising a transistor switching circuit operatively connected between said pair of DC supply terminals;

said DC controller means also comprising control means connected to one of said DC supply terminals and to said DC ground terminal for generating signals to which said transistor switching circuit is responsive to control application of power between said AC power input terminal and said AC power output terminal, said control means being arranged to receive power, rectified to DC, from the AC supply independent of the on or off status of the load.

4,359,682

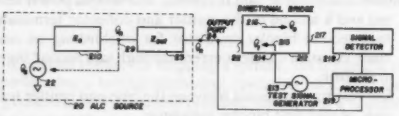
METHOD AND APPARATUS FOR TESTING THE OUTPUT REFLECTION COEFFICIENT OF AN AUTOMATIC LEVEL CONTROLLED SOURCE

Phillip D. Winslow, Loveland, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jul. 14, 1980, Ser. No. 168,973

Int. Cl.³ G01R *27/04*

U.S. Cl. 324—58 B **10 Claims**



1. A method of measuring the absolute value of the reflection coefficient between a transmission line of known characteristic impedance Z_o and the output port of an automatic level controlled source, said method comprising the steps of:

(a) activating the automatic level controlled source to produce an output signal of known amplitude V_{nom} and frequency f_s at the output port of the automatic level controlled source;

(b) coupling the transmission line of characteristic impedance Z_o to the output port of the automatic level controlled source;

(c) applying a test signal of known amplitude V_t and frequency f_t through the transmission line to the output port of the automatic level controlled source to perturb the output signal of the automatic level controlled source;

(d) detecting the magnitude of the amplitude modulation component of the resulting perturbed output signal; and

(e) determining the absolute value of the reflection coefficient from V_t and the magnitude of the amplitude modulation component of the output signal.

4,359,683

MICROWAVE INTERFEROMETER

John W. H. Chivers, Duffield, England, assignor to Rolls-Royce Limited, London, England

Filed Oct. 10, 1980, Ser. No. 196,113

Claims priority, application United Kingdom, Nov. 7, 1979, 7938552

Int. Cl.³ G01R *27/04*

U.S. Cl. 324—58.5 B **8 Claims**

1. Apparatus for measuring distance, comprising:

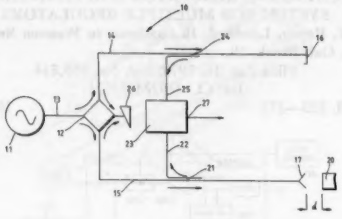
a source of microwave energy;

a first waveguide terminated in a short circuit;

a second waveguide having a length and a cross-sectional area equal to the length and cross-sectional area, respectively, of the first waveguide and positioned substantially adjacent to said first waveguide;

means for dividing energy from said source equally between said first and second waveguides;

an antenna coupled to said second waveguide, tapered so as to terminate in an aperture of smaller cross-section area than that of the first and second waveguides for transmitting microwave energy to an object to be measured and receiving therefrom microwave energy reflected thereby; and



means for detecting a phase difference between microwave energy reflected from said object and microwave energy reflected from said short circuit and providing an output signal proportional to said phase difference, the phase difference being related to the distance between said antenna and said object.

4,359,684

ELECTRONIC WATT-HOUR METER

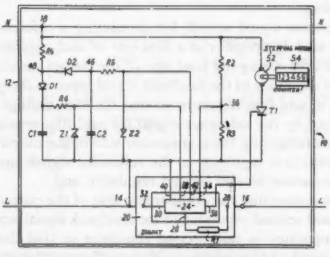
Anthony J. Ley, Bievres, France, assignor to Enertec, Montrouge, France

Filed May 12, 1978, Ser. No. 905,450

Claims priority, application United Kingdom, May 16, 1977, 20564/77

Int. Cl.³ G01R *21/06*

U.S. Cl. 324—142 **62 Claims**



1. An electronic watthour meter adapted to be connected in an A. C. electrical power distribution circuit for producing an output signal related to the energy supplied by an electrical power supplier to an electrical power consumer via said distribution circuit, said distribution circuit consisting of first and second wires of which at least the first wire is live, the watthour meter comprising:

current sensing means, for producing a signal representative of the instantaneous magnitude of the current flowing in the first wire;

voltage sensing means for producing a signal representative of the instantaneous magnitude of the voltage between the first wire and the second wire;

an electronic circuit connected to receive the current-representative signal and the voltage-representative signal, said electronic circuit including at least means for producing a signal which varies substantially in accordance with the product of the respective instantaneous

magnitudes of said current- and voltage-representative signals;

means for integrating, over time, said product signal to produce said output signal and for indicating the energy supplied to said electrical power consumer; and

a power supply adapted to be connected between the first and second wires, said power supply having at least one power supply point and being arranged, in use, to generate between said at least one power supply point and the first wire a DC power supply voltage suitable for operating said electronic circuit whereby said DC power supply electrically floats at the elevated voltage of the first live wire, said electronic circuit being connected to receive and be rendered operative by said power supply voltage.

4,359,685

MAGNETO-RESISTANCE TYPE CONTACTLESS ROTATIONAL ANGLE DETECTING APPARATUS

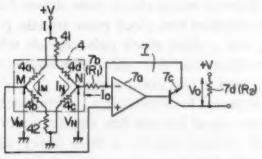
Osamu Eguchi, Anjo, and Mitsutoshi Hattori, Okazaki, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Oct. 5, 1979, Ser. No. 82,423

Claims priority, application Japan, Oct. 10, 1978, 53/124403; May 16, 1979, 54/60848

Int. Cl.³ G01B *7/14;* G01P *3/48*

U.S. Cl. 324—208 **4 Claims**



1. An apparatus for detecting a rotational angle of a rotatable body comprising:

an electric power source;

a magnet for producing a fixed magnetic field and a supporting member fixedly supporting said magnet;

a bridge circuit placed in said fixed magnetic field and having a first arm, a second arm having one end connected in series with said first arm, a third arm and a fourth arm having one end connected in series with said third arm, a junction point between said first arm and said third arm and a junction point between said second arm and said fourth arm being connected across said electric power source, each of said arms including a magneto-resistance element which varies the electric resistance in accordance with the direction of said magnetic field, and said first and fourth arms further including respective resistors having electric resistances which keep one voltage signal developed across said fourth arm larger than the other voltage signal developed across said second arm;

a voltage-current converter connected to said bridge circuit for producing an electric current proportional to the difference between said one and the other voltage signals;

a current-voltage converter connected to said voltage-current converter for producing an output voltage signal proportional to said electric current; and

means for rotating said bridge circuit in synchronized relation with said rotatable body.

4,359,686

METAL DETECTION APPARATUS WITH BASKET

Kenneth Wherry, Box 433, Faulkton, S. Dak. 57438

Filed Jun. 30, 1980, Ser. No. 164,359

Int. Cl.³ G01V *3/11;* B03C *1/30;* E02F *3/02*

U.S. Cl. 324—326 **10 Claims**

1. Metal detection apparatus comprising:

nonmetallic basket means having a top portion, a side wall portion, an open bottom, and a blade portion for scooping material into the basket means through the open bottom;

handle means having a first end attached to the basket means;

metal detection coil means for detecting metal objects; and

pivotal mounting means for pivotally mounting the metal detection coil means with respect to the basket means and for holding the metal detection coil means in a first search position proximate and at least partially covering the open bottom for detection of metal objects, and for permitting the metal detection coil means to pivot to a second position within the basket means as the basket means fills with material.

4,359,687

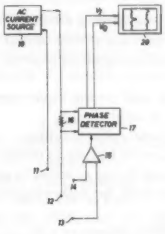
METHOD AND APPARATUS FOR DETERMINING SHALINESS AND OIL SATURATIONS IN EARTH FORMATIONS USING INDUCED POLARIZATION IN THE FREQUENCY DOMAIN

Harold J. Vinegar, and Monroe H. Waxman, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Jan. 25, 1980, Ser. No. 115,472

Int. Cl.³ G01V *3/24*

U.S. Cl. 324—366 **12 Claims**



1. An apparatus for induced polarization logging comprising:

a sonde, said sonde having a housing formed of a non-metallic material and adapted for lowering in a borehole on a logging cable;

at least a pair of current electrodes and a pair of non-polarizing voltage electrodes mounted on said sonde at various spaced longitudinal positions;

a source of alternating current being located at the surface, said source being coupled to the pair of current electrodes and supplying alternating current to said electrodes at various discrete frequencies between 0.1 and 100 Hz;

a reference resistor coupled in series with said alternating current source, and located in the sonde;

a differential amplifier means with high input impedance, said amplifier being located in the sonde, said high input impedance differential amplifier being coupled to the pair of voltage electrodes;

a phase detector, both said series resistor and said amplifier

being coupled to said phase detector, said phase detector comparing the voltage across said series resistor and said amplifier signal, said phase detector being located in the sonde and supplying a voltage signal proportional to the phase shift induced by the earth formation for transmission to the surface;

a jumper cable having both a stress member and a plurality of conductors, one end of the stress member of said jumper cable being secured to said sonde and the other end of the stress member being secured to a well logging cable coupling head, the output of said amplifier being coupled to at least some of the conductors in said cable and the outer surface of said jumper cable being electrically insulated;

a logging cable, said logging cable being coupled to said coupling head; and,

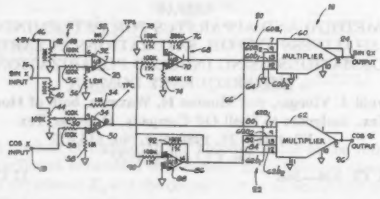
a recording means, said recording means being located at the surface and coupled to said logging cable.

4,359,688

FREQUENCY MULTIPLYING CIRCUIT FOR AN OPTICAL ENCODER

George D. Haville, Little Rock, Ark., assignor to BEI Electronics, Inc., Little Rock, Ark.

Filed Oct. 30, 1980, Ser. No. 202,166
Int. Cl.³ H03B *19/00*
U.S. Cl. 328—20 **10 Claims**



1. A frequency multiplying electrical circuit for producing double frequency sine and cosine output signals sin 2x and cos 2x from sine and cosine input signals sin x and cos x, comprising

sine input means and cosine input means for supplying the sin x and cos x input signals;

first and second multiplier circuits,

each multiplier circuit having an output e_o and four inputs a_1, a_2, b_1 and b_2 and being adapted to perform multiplication in accordance with the following relation:

$$e_o = K(a_1 - a_2)(b_1 - b_2);$$

means connected between said cosine input means and said a_1 input of said first multiplier circuit for supplying the cos x input signal to said a_1 input thereof;

means including an amplifier having a gain of two connected between said sine input means and said b_1 input of said first multiplier circuit for supplying a 2 sin x signal to said b_1 input of said first multiplier circuit,

means for supplying zero input to said a_2 and b_2 inputs of said first multiplier circuit;

means connected between said cosine input means and said a_1 and b_1 inputs of said second multiplier circuit for supplying the cos x input signal to said a_1 and b_1 inputs of said second multiplier circuit;

means including a phase inverter connected between said sine input means and said a_2 input of said second multiplier circuit for supplying a negative sin x input to said a_2 input of said second multiplier circuit;

and means connected between said sine input means and said b_2 input of said second multiplier circuit for supplying the sin x input signal to said b_2 input of said second multiplier circuit,

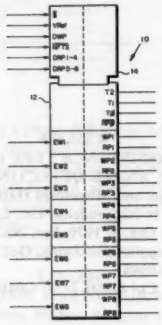
whereby said first multiplier circuit develops an output proportional to sin 2x, while said second multiplier circuit develops an output proportional to cos 2x.

4,359,689

CLOCK PULSE DRIVER

Russell W. Guenthner, Glendale, Ariz., assignor to Honeywell Information Systems Inc., Phoenix, Ariz.

Filed Jan. 11, 1980, Ser. No. 111,456
Int. Cl.³ H03K *5/156*
U.S. Cl. 328—72 **8 Claims**



1. A current mode clock pulse driver for producing n individually enabled first clock pulse signals, p second clock pulse signals, and q third clock pulse signals where n, p and q are integers other than zero, all signals having two values denoted 0 and 1; said driver comprising:

circuit means for receiving a system clock pulse signal, a first delay signal for said first signals, a second delay signal for said second signals, a third delay signal for said third signals, and n enable signals, one for each of the first clock pulse signals produced;

circuit means for producing each of the n first clock signals at a time at which the enable signal for each of the n first clock signals and the system clock pulse signal and the first delay signal, each have a predetermined value;

circuit means for producing p second clock signals at a time at which the second delay signal and the inverted system clock signal have a predetermined value; and

circuit means for producing q third clock signals at a time at which the third delay signal and the inverted system clock signal have a predetermined value.

4,359,690

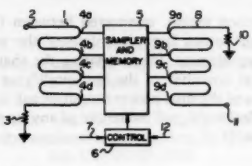
MICROWAVE STORAGE DEVICE

Trevor W. Tucker, Ottawa; Larry J. Conway, Kanata, and Sylvain L. Bouchard, Gatineau, all of Canada, assignors to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence, Ottawa, Canada

Filed Jul. 17, 1980, Ser. No. 169,725
Claims priority, application Canada, Dec. 21, 1979, 342527
Int. Cl.³ H03K *5/13;* G11C *27/02;* H03K *5/159*
U.S. Cl. 328—151 **23 Claims**

1. Signal translation means comprising an input delay line means for distributing said signal, means for sampling the amplitude of the distributed signal at predetermined points along the delay line means, amplifier means for amplifying the samples taken at said predetermined points along the delay line

means, means for storing the samples, output delay line means similar to the input delay line means, and means for applying



the stored samples to the output delay line means at points corresponding to said predetermined points.

4,359,691

DEMODULATOR FOR FREQUENCY MODULATED SIGNAL ACCOMPANIED BY REFERENCE SIGNAL

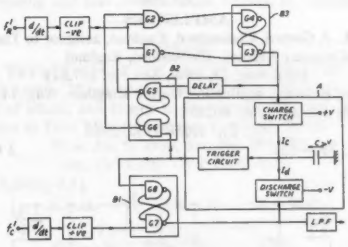
Alan Robson, Wells, England, assignor to EMI Limited, Hayes, England

Filed Oct. 27, 1980, Ser. No. 201,236

Claims priority, application United Kingdom, Oct. 26, 1979, 7937263

Int. Cl.³ H03K 9/06

U.S. Cl. 329—50 **8 Claims**



1. A frequency demodulator for demodulating a frequency modulated signal derived from a source where it is accompanied by a reference signal of frequency greater than the greatest frequency of the modulated signal, the modulated and reference signals being subject to the same proportional frequency errors,

the demodulator comprising

an input for receiving the modulated signal,

an input for receiving the reference signal,

means arranged to measure and store, during each cycle of the modulated signal, a representation of the period of one cycle of the reference signal occurring during that cycle of the modulated signal,

means responsive to the modulated signal to produce a pulse of area dependent on the stored representation during a predetermined portion of the cycle of the modulated signal following the one in which the representation was stored, and

filter means for producing a signal representing the area of each pulse averaged over one cycle of the modulated signal.

4,359,692

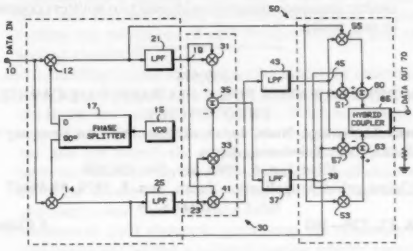
RAPID ACQUISITION SHIFT KEYED SIGNAL DEMODULATOR

Carl R. Ryan, Gilbert, Ariz., assignor to Motorola Inc., Schaumburg, Ill.

Filed Nov. 7, 1980, Ser. No. 204,743

Int. Cl.³ H03D 3/06; H04L 27/22

U.S. Cl. 329—50 **10 Claims**



1. A rapid acquisition carrier demodulator comprising:

(a) a shift keyed phase detector having an input for receiving a signal including data shift keyed modulated on a carrier, a local oscillator connected to supply a reference frequency to said phase detector, and an in-phase channel and a quadrature channel each providing a signal generated from the received signal and each including data at differing phase error angles relative to the local oscillator reference frequency;

(b) first combining means coupled to said phase detector to receive the in-phase and quadrature channel signals and generate a plurality of phase error signals differing from each other by a fixed phase angle;

(c) low pass filter means coupled to pass the plurality of phase error signals and substantially reduce noise prevalent in the plurality of phase error signals; and

(d) second combining means coupled to said phase detector and said low pass filter means to receive the in-phase and quadrature channel signals and the plurality of phase error signals for combining the signals to provide a data signal.

4,359,693

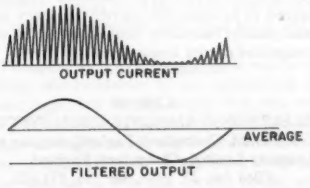
FULL WAVE AMPLITUDE MODULATION DETECTOR CIRCUIT

Don R. Sauer, San Jose, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Sep. 15, 1980, Ser. No. 187,006

Int. Cl.³ H03D 1/18

U.S. Cl. 329—101 **8 Claims**



1. An amplitude modulation detector comprising:

first and second supply terminals connectible to a source of operating power;

a pair of circuit nodes;

means coupled between said nodes and said first terminal for supplying differential currents to said nodes, said differen-

tial currents being related to an amplitude modulated radio frequency carrier wave;

current mirror means having a common terminal and a pair of current terminals coupled between said nodes and said second supply terminal thereby to develop signals at said nodes related to said carrier wave; and

means for combining said signals at said nodes to provide an output that is related to the modulation on said carrier wave wherein said means for combining comprises a two emitter transistor structure with said two emitters coupled to said nodes.

4,359,694

FM DEMODULATOR FOR A PLURALITY OF CARRIER FREQUENCIES

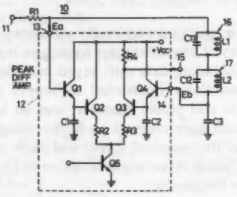
Kazuyuki Suenaga, Noda, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Jun. 4, 1980, Ser. No. 156,858

Claims priority, application Japan, Jun. 5, 1979, 54-69467

Int. Cl.³ H03D *3/26*

U.S. Cl. 329—103 **4 Claims**



1. An FM signal demodulating circuit for demodulating any one of a plurality of input signals having given different carrier frequencies, comprising:

(a) a differential amplifier having two input terminals;

(b) means for coupling of said FM signals to one of said input terminals of said differential amplifier;

(c) a resonant circuit network connected between said two input terminals, of said differential amplifier, said resonant circuit network comprising a plurality of parallel resonant circuits which are connected in series, said parallel resonant circuits having different parallel resonance frequencies; and

(d) a capacitor connected between the other input terminal of said differential amplifier and a reference potential, said plurality of parallel resonant circuits and said capacitor forming a series resonant circuit, said series resonant circuit having a plurality of series resonance frequencies, said series and parallel resonance frequencies having values selected to result in each of said FM signals having given carrier frequencies lying substantially in the middle between that one of said series resonance frequencies which is nearest to its respective carrier frequency and that one of said parallel resonance frequencies which is nearest to its respective carrier frequency.

4,359,695

ELECTRONIC AMPLIFICATION SYSTEMS

Roger E. J. Gerard, Chelmsford, England, assignor to The Marconi Company Limited, Chelmsford, England

Filed Jul. 23, 1980, Ser. No. 171,422

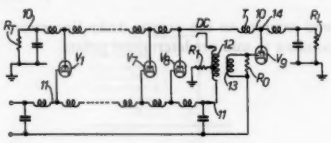
Claims priority, application United Kingdom, Aug. 14, 1979, 7928256

Int. Cl.³ H03F *1/32, 3/68*

U.S. Cl. 330—151 **8 Claims**

1. An electronic amplification system incorporating a distributed amplifier including a number of individual amplifying members arranged in parallel to take a control signal from one common input line and to feed an amplified signal to one common output line, the arrangement being such that the control signal arrives sequentially at each amplifying member, and such that all the individual outputs add in phase to give the maximum output, which electronic amplification system also comprises:

(a) comparison means, connected between the amplifier's input and output lines downline of the amplifier's last amplifying element, for comparing the shape of the control signal downline of the last amplifying element with the shape of the final power output signal, and for providing a difference signal indicative of any amplifier-induced distortion;



(b) correction signal generating means, coupled to the comparison means, for forming in dependance upon the difference signal a correction signal which may be used to compensate for the amplifier-induced distortion; and

(c) combiner means, connected between the correction signal generating means and the amplifier's output line downline of the connection with the comparison means, for combining the correction signal with the final power output signal so as substantially to cancel the amplifier-induced distortion.

4,359,696

AMPLIFIERS

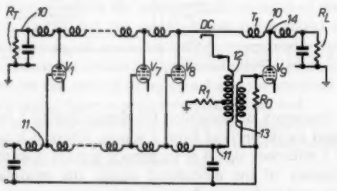
Roger E. J. Gerard, Chelmsford, England, assignor to The Marconi Company Limited, Chelmsford, England

Filed Aug. 13, 1980, Ser. No. 177,821

Claims priority, application United Kingdom, Aug. 14, 1979, 7928256; Jul. 30, 1980, 8024981

Int. Cl.³ H03F *1/32, 3/68*

U.S. Cl. 330—151 **3 Claims**



1. A feedforward electronic amplification system including an amplifier; comparison means, connected between the amplifier's input and output lines downline of the amplifier, for comparing the shape of the control signal downline of said amplifier with the shape of the final output signal, and for providing a difference signal indicative of any amplifier-induced distortion; correction signal generating means, coupled to the comparison means, for forming in dependence upon the difference signal a correction signal which may be used to compensate for the amplifier-induced distortion; and combiner means, connected between the correction signal generating means and the amplifier's output line downline of the connection with the comparison means, for combining the correction signal with the final output signal so as substantially to cancel the amplifier-induced distortion, the combiner forming part of

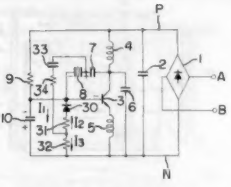
a section of the said output line, and exhibiting the same characteristic impedance as the output line, said combiner including an amplifying device arranged to operate as a variable current source.

4,359,697

ULTRASONIC WAVE NEBULIZER DRIVING CIRCUIT

Minoru Takahashi, Funabashi, Japan, assignor to TDK Electronics, Co. Ltd., Tokyo, Japan

Continuation of Ser. No. 56,614, Jul. 11, 1979, abandoned. This application Aug. 21, 1981, Ser. No. 294,845
Claims priority, application Japan, Aug. 3, 1978, 53-106104
Int. Cl.³ H01P 3/08
U.S. Cl. 331—116 R 9 Claims



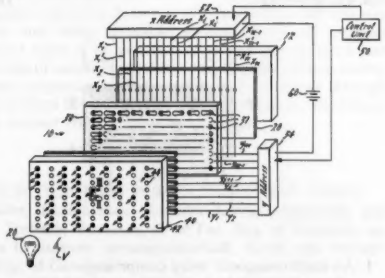
1. In an ultrasonic nebulizer driving circuit that includes an oscillator for generating a high frequency signal to energize a piezo-electric vibrator that generates ultrasonic waves, said oscillator including a control element having a control electrode, means including a bias resistor for supplying a biasing current to said control electrode, the improvement comprising a positive feedback circuit to feed back a part of said high frequency signal to said control electrode independent of said bias resistor to supplement said biasing current and concomitantly enable said bias resistor to be reduced in wattage.

4,359,698

REFLECTING TYPE LIGHT MODULATOR

John J. Lambe, Birmingham; Shaun L. McCarthy, Ann Arbor, both of Mich., and Henry L. Stadler, Washington, D.C., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jul. 9, 1980, Ser. No. 167,259
Int. Cl.³ G02F 1/28; G09F 9/30
U.S. Cl. 332—7.51 7 Claims



1. A device for modulating incident electromagnetic radiation transmitted from a source comprising:

means in the path of said radiation for providing a fluid-tight cavity having first and second chambers, wherein said first one of said chambers contains a window and a light absorbing medium and said second one of said chambers is opaque to said radiation;

a radiation reflecting element within said cavity and movable between said first and second chambers, wherein said element reflects said incident radiation from said first chamber when located within said first chamber between said window and said light absorbing medium and does not reflect said incident radiation when located within said second chamber and said element has a predetermined value of specific gravity;

means including a first switching electrode in said first chamber, a second switching electrode in said second chamber and a common electrode in said cavity spaced from said first and second switching electrodes for controlling the movement of said element between first and second chambers;

said controlling means further includes means for selectively applying an electrical potential between said common electrode and said first electrode to effect movement of said element from said first chamber to said second chamber and for selectively applying an electrical potential between said common electrode and said second electrode to effect movement of said element from said second chamber to said first chamber; and

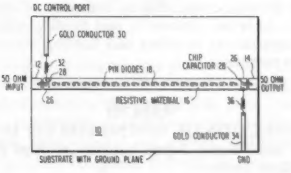
a transparent fluid dielectric occupying the remainder of said cavity and having a value of specific gravity approximately equal to said predetermined value, whereby the application of said electrical potential produces ion injection into said fluid dielectric and resultant turbulent forces on said element to effect its movement.

4,359,699

PIN DIODE ATTENUATOR EXHIBITING REDUCED PHASE SHIFT AND CAPABLE OF FAST SWITCHING TIMES

Philip R. Horkin, Littleton, Colo., assignor to Martin Marietta Corporation, Bethesda, Md.

Filed Mar. 25, 1981, Ser. No. 247,455
Int. Cl.³ H01P 1/22
U.S. Cl. 333—81 A 11 Claims



1. A microwave signal attenuator for variably attenuating an rf signal, said attenuator comprising:

an attenuating conductor of resistive material, said attenuating conductor having input and output ends and extending in a conducting direction from said input end to said output end;

means for coupling an rf signal to said input end for propagation along said conductor in said conducting direction from said input end to said output end, and means for coupling an attenuated rf signal from said output end;

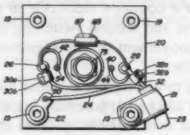
diode means having an anode and a cathode, the anode and cathode of said PIN diode means being coupled to said resistive material at first and second points which are offset from one another along said conducting direction, whereby said diode means is connected in parallel with a first segment of said attenuating conductor between said first and second points; and

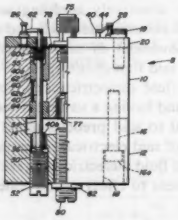
biasing means for variably biasing said PIN diode means to thereby control the degree of attenuation of said microwave signal attenuator.

4,359,700
BALANCING NETWORK FOR MICROWAVE POWER COMBINER

Carl P. Tresselt, Baltimore, Md., assignor to The Bendix Corporation, Baltimore, Md.

Filed Oct. 7, 1980, Ser. No. 194,746
Int. Cl.³ H01P 5/12
U.S. Cl. 333—136 9 Claims





1. A microwave power combiner for combining the power output from a plurality of active electronic elements which individually generate RF power in response to individually impressed bias applied at bias points, a typical said bias point being associated with a typical said active electronic element and communicating electrically with one electrode of its associated active electronic element, the other electrode of said associated active electronic element being connected in common with the other electrode of the other active electronic elements to a bias return terminal, an improvement comprising:

a floating node;

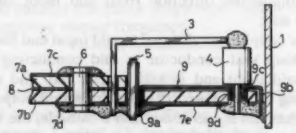
a plurality of essentially identical resistors, a typical said resistor being associated with a typical said active electronic element connecting the bias point of said associated active electronic element to said floating node; and,

means capacitively coupling said floating node to said bias return terminal.

4,359,701
CONSTRUCTION OF TUNING CIRCUIT IN TUNER

Kazuharu Aoki, Soma, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed Dec. 2, 1980, Ser. No. 212,099
Claims priority, application Japan, Dec. 31, 1979, 54/183167[U]
Int. Cl.³ H03J 3/20
U.S. Cl. 334—15 4 Claims

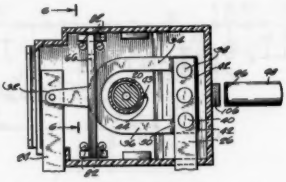


1. In a construction of a tuning circuit for a tuner having a printed circuit board lamination constituted by an upper printed circuit board and a lower printed circuit board, said upper and lower printed circuit boards being laminated back to back, and electronic component parts being inserted in holes formed in the said printed circuit board lamination, the improvement comprising said printed circuit board lamination being provided with an area lacking said upper printed circuit board, and a varactor diode and a portion of a resonance rod parallel to said printed circuit board lamination being provided in said area with the lead of said varactor diode passing through said lower printed circuit board.

4,359,702
RELAY FOR MICROWAVE OVEN

Spencer C. Schantz, 5880 Anchorage Rd., Oconomowoc, Wis. 53066

Filed Jul. 24, 1980, Ser. No. 171,773
Int. Cl.³ H01H 50/02, 50/24, 50/34
U.S. Cl. 335—2 14 Claims

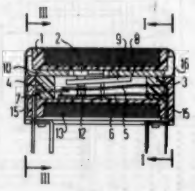


1. In an electromagnetic device having a ferromagnetic frame, a core mounted on the frame, a coil of wire wound on a bobbin which is around said core and having a ferromagnetic armature pivoted to said frame adjacent to said core for movement toward and away from the end of said core, the improvement comprising a contact strip having a bifurcated portion surrounding the core of said bobbin, with the bifurcated portion anchored to a terminal strip on one side of said coil and a contact structure at the other end of the contact strip to maximize the length of the contact strip and reduce the overall length of said device.

4,359,703
ELECTROMAGNETIC RELAY

Helmut Schedele, Diessen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jun. 11, 1981, Ser. No. 272,664
Claims priority, application Fed. Rep. of Germany, Jul. 8, 1980, 3025834
Int. Cl.³ H01H 51/08
U.S. Cl. 335—202 11 Claims



1. An electromagnetic relay comprising:

a coil spool about which a coil is wound and having a hollow interior having a plurality of axial guide grooves therein;

a plurality of contact elements disposed approximately axially parallel within said interior of said coil spool;

a yoke and an armature disposed in said interior of said coil spool operable for actuating said contact elements;

a pair of contact mounts which are respectively inserted into opposite ends of said coil spool at opposite open end faces thereof, said contact mounts each carrying and rigidly holding a portion of said plurality of contact elements and

one of said pair of contact mounts additionally carrying said yoke and said armature and the other of said contact mounts additionally carrying a pole piece,

each of said contact mounts consisting of insulating material and having a U-shape with lateral arms which enclose said contact elements in said interior of said spool and a guide means carried on said lateral arms for engaging said guide grooves up to a center of said coil spool for accurately and fixedly positioning said carrier mounts and said contact elements.

4,359,704

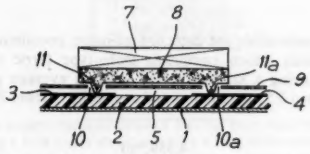
DEVICE FOR SETTING UP CONTACT CONNECTIONS BETWEEN INDEPENDENT ELECTRICAL CIRCUITS

Philippe Cloup, Latresne, France, assignor to Editions Edmond Dujardin, La Teste de Buch, France

Filed Jun. 7, 1979, Ser. No. 46,562

Int. Cl.³ H01H *36/00*

U.S. Cl. 335—205 **3 Claims**



1. A device for making electrical interconnection between independent electrical circuits, said device comprising:

a support sheet of electrically insulating material;

a plurality of independent electrically conductive circuit paths disposed on one surface of said support sheet, each of said circuit paths having contact areas thereon;

a continuous plate of material to which magnets are attracted disposed on the opposite surface of said support sheet, said plate being coextensive with the area of said one surface upon which said circuit paths reside;

a layer of insulating material disposed on top of said circuit paths on said one surface of said support sheet, said layer of insulating material having orifices disposed opposite said contact areas of said circuit paths; and

electrically conductive magnetic means coupled to said support sheet adjacent said one surface thereof by the magnetic attraction between said magnetic means and said plate and being movable to selectively interconnect contact areas of at least two of said circuit paths on said one side of said support sheet, said magnetic means having bosses projecting therefrom adapted to extend through said orifices in said layer of insulating material to contact said contact areas of said circuit paths.

4,359,705

DEFLECTION UNIT FOR CATHODE RAY TUBES

Josef Bohn, Rheinhausen; Joachim Lerch, Eggenstein, and Franz Troltsch, Stutensee, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

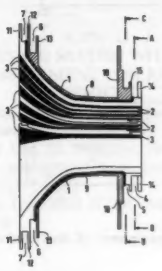
Filed Oct. 3, 1980, Ser. No. 193,740

Claims priority, application Fed. Rep. of Germany, Oct. 9, 1979, 2940931

Int. Cl.³ H01F *7/00*

U.S. Cl. 335—213 **12 Claims**

1. A deflection unit for a cathode ray tube having first and second sets of saddle-shaped coils which are respectively associated with first and second directions of electron beam deflection, the coils having windings which run in slots which extend along the inside of a coil form which is shaped so as to flare outwardly with respect to a first direction along a central longitudinal axis, the coil form further having first and second coil head chambers for communicating with the slots at respective first and second ends, the deflection unit being characterized in that the coil form is constructed in one piece, and the first and second sets of coils are wound so as to be interleaved in respective ones of the slots.



4,359,706

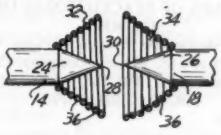
MAGNET POLE PIECES AND POLE PIECE EXTENSIONS AND SHIELDS

Arnold Flack, 15913 Pennsylvania, Southfield, Mich. 48075

Filed Dec. 18, 1979, Ser. No. 104,786

Int. Cl.³ H01F *3/00, 7/02, 7/08*

U.S. Cl. 335—281 **9 Claims**



1. In combination, a magnet pole piece having a frusto-conical end portion and a magnetic field correction member for the magnetic field formed by the magnet pole piece, said correction member comprising at least one hollow shield member attached to the frusto-conical end portion, said hollow shield member being made of magnetic material, wherein said hollow shield is in the form of a generally conical diverging helical strand of said magnetic material.

4,359,707

PICTURE TUBE DEMAGNETIZING COIL ARRANGEMENT

Dieter Spannhake, Reinheim, and Otto Chwalkowski, Gross-Gerau, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 8, 1980, Ser. No. 184,993

Claims priority, application Fed. Rep. of Germany, Nov. 15, 1979, 2946061

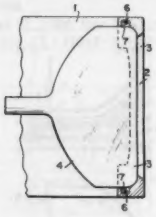
Int. Cl.³ H01F *13/00*

U.S. Cl. 335—284 **1 Claim**

1. In a housing with a frontal opening for a picture tube display, the frontal opening accommodating a removable aperture frame which covers the frontal juncture of the housing and the picture tube, the improvement comprising:

a demagnetizing device for a picture tube for receiving demagnetizing current in a demagnetizing procedure,

comprising a removable aperture frame (3) which closely surround the picture screen of a picture tube (4) and a coil



(6,6') around the periphery of, and held on and within said aperture frame.

4,359,708

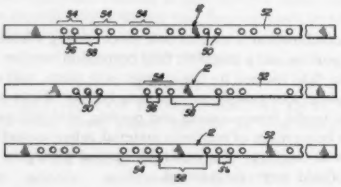
FUSIBLE ELEMENT FOR A CURRENT-LIMITING FUSE HAVING GROUPS OF SPACED HOLES OR NOTCHES THEREIN

John M. Jarosz, Skokie, and William R. Panas, Glenview, both of Ill., assignors to S&C Electric Company, Chicago, Ill.

Filed Oct. 6, 1980, Ser. No. 194,712

Int. Cl.³ H01H *55/10*

U.S. Cl. 337—159 **21 Claims**



1. A fusible element for a high-voltage, current-limiting fuse, comprising:

an elongated, thin, conductive ribbon having along its entire length a substantially uniform thickness and, between its edges, a substantially uniform width, the ribbon having a major longitudinal axis centered between its edges, and

a plurality of groups of holes or notches formed through or in the ribbon, the holes or notches having similar transverse locations relative to the axis and to the edges of the ribbon, adjacent holes or notches of each group being separated therewithin along the ribbon by a first distance, measured parallel to the axis, which is substantially less than a second distance, measured parallel to the axis, between adjacent groups along the ribbon, so that both higher and lower voltage fault currents are effectively interrupted, and so that the arc voltage developed by the fuse during the occurrence of the lower voltage fault currents does not exceed a predetermined value.

4,359,709

COMBUSTIBLE GAS SENSOR

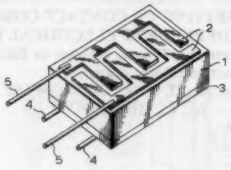
Yoshihiko Nakatani, Osaka; Masayuki Sakai, Katano; Seiichi Nakatani, Neyagawa, and Michio Matsuoka, Ibaraki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Jul. 1, 1980, Ser. No. 165,008

Claims priority, application Japan, Jul. 6, 1979, 54-86173; Jul. 6, 1979, 54-86174

Int. Cl.³ H01L *47/00*

U.S. Cl. 338—34 **5 Claims**



1. A combustible gas detecting element, containing a sensitive element which comprises alpha-type ferric oxide (α-Fe_2O_3) having a microstructure with an average grain size smaller than 0.5 micrometers and a porosity of from 35 to 85%.

4,359,710

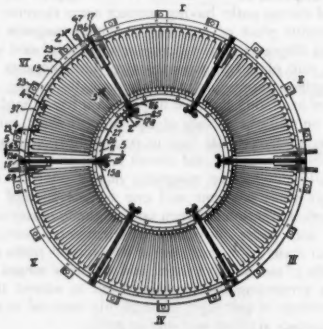
ANNULAR RESISTOR WITH ZIG-ZAG LAYER PATTERN FOR RESISTANCE ELEMENTS

William R. Luy, Colgate, Wis., assignor to Eaton Corporation, Cleveland, Ohio

Filed Feb. 11, 1980, Ser. No. 120,441

Int. Cl.³ H01C *1/08*

U.S. Cl. 338—51 **14 Claims**



1. A resistor comprising in combination:

a supporting frame having inner and outer arcuate portions and portions holding them in spaced apart concentric relationship;

insulating means secured to the arcuate opposing faces of said inner and outer spaced frame portions;

a plurality of layers of reflexed resistance ribbons, each of said ribbons having segments arranged in a radial relation between the inner and outer portions of said supporting frame, said segments attached to each other at connections in proximity to said insulating means, said layers of resistance ribbon being mounted such that the ribbon surfaces of the different layers are skewed, in a zig-zag pattern;

support means between said insulating means and said connections between said radial segments of said ribbons for providing individual support for each of said connections and holding said ribbons in the zig-zag pattern within the

space defined by opposing faces of said insulating means; and

terminal means connected to said ribbons for connecting the latter to a source of electric current.

4,359,711

ROTARY VARIABLE RESISTOR

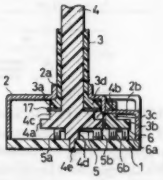
Hirokuni Tanabe, Miyagi, and Masahiro Onodera, Furukawa, both of Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

Filed Jun. 18, 1981, Ser. No. 274,759

Claims priority, application Japan, Jun. 23, 1980, 55-87763[U]

Int. Cl.³ H01C *10/16*

U.S. Cl. 338—134 **3 Claims**



1. In a rotary variable resistor having two concentric shafts including a first outer shaft carrying a first slider outwardly of its lower end portion, and an inner shaft extending through said outer shaft and carrying on its lower portion a second slider adapted to pass between said outer shaft and said first slider during rotation of either of said shafts, the improvement including a plate member held between respective flange portions formed on the lower portion of said outer and inner shafts and means engaging said plate member for preventing it from rotating whenever either of said shafts is rotated to prevent such rotation being transmitted to the other shaft.

4,359,712

COMMUNICATIONS SYSTEM FOR AUTOMOTIVE VEHICLES

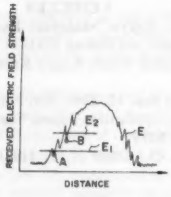
Akira Matsumura, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Mar. 24, 1980, Ser. No. 133,259

Claims priority, application Japan, Mar. 26, 1979, 54-35387

Int. Cl.³ G08G *1/00;* **G08C** *21/00;* **G08G** *1/12*

U.S. Cl. 340—23 **2 Claims**



1. A communications system for automotive vehicles, which comprises:

(a) a fixed communications unit which transmits an area signal at all times and an information signal if requested; and

(b) a mobile communications unit which transmits a request signal when the area signal is received within a communications area, and receives the information signal from said fixed unit in accordance with the request signal; the threshold level, in said fixed communications unit, for electric field strength transmitted from said mobile communications unit being predetermined higher than that, in said mobile unit, for electric field strength transmitted from said fixed communications unit, in the case where the electric field strengths transmitted from both said mobile and fixed communications units are equal to each other.

4,359,713

VOICE WARNING SYSTEM WITH AUTOMATIC VOLUME ADJUSTMENT FOR AN AUTOMOTIVE VEHICLE

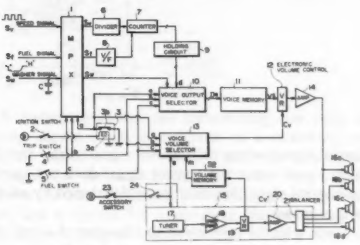
Masakazu Tsunoda, Fujisawa, Japan, assignor to Nissan Motor Company, Limited, Kanagawa, Japan

Filed Aug. 28, 1980, Ser. No. 182,237

Claims priority, application Japan, Aug. 31, 1979, 54-110250; Aug. 31, 1979, 54-119114[U]

Int. Cl.³ G08B *21/00;* **B60Q** *5/00*

U.S. Cl. 340—52 F **8 Claims**



1. A voice warning system for an automotive vehicle, which comprises:

(a) a plurality of information switches;

(b) a multiplexer for selectively outputting one of various signals indicating vehicle operating conditions when one of said switches is actuated;

(c) a voice output selector for outputting a voice output designation signal D_s in accordance with the signal from said multiplexer;

(d) a voice memory for storing a number of voice outputs and for outputting a series of voice signals V_s in response to the voice output designation signal D_s from said voice output selector;

(e) an electronic volume controller for controlling the level of voice signals V_s outputted from said voice memory; and

(f) a voice volume selector for selectively outputting different voltage signals C_v to said electronic volume controller, by using a potential divider including a plurality of resistors, when one of said information switches is turned on,

whereby the voice is automatically changed according to the kind of information warning of various vehicle operating conditions.

4,359,714

VOICE WARNING SYSTEM FOR AN AUTOMOTIVE VEHICLE

Masakazu Tsunoda, Fujisawa, and Kazuyuki Mori, Yokohama, both of Japan, assignors to Nissan Motor Company, Limited, Kanagawa, Japan

Filed Oct. 23, 1980, Ser. No. 199,709

Claims priority, application Japan, Oct. 24, 1980, 54-136432

Int. Cl.³ B60Q *5/00*

U.S. Cl. 340—52 F **6 Claims**

1. A voice warning system for an automotive vehicle, said system comprising:

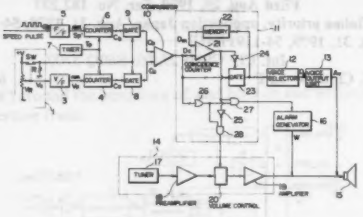
(a) at least one sensor for periodically detecting various signals indicative of various vehicle operating conditions;

(b) at least one vehicle operating-condition presetting device

for presetting various signals indicative of various preset vehicle operating-conditions;

(c) comparator means responsive to signals developed by said at least one of said sensors and said at least one of said vehicle operating-condition presetting devices for developing voice information control signals when said signals applied to said comparator means are unequal to each other;

(d) discriminator means responsive to said comparator means for detecting variation in one of the control signals from said comparator means, and for developing (1) the



control signal when the control signal varies and (2) an alarm signal when the control signal does not vary after the control signal has once been developed by said comparator means;

(e) a voice selector responsive to the control signal of said discriminator means for selecting one of a plurality of designation signals stored therein;

(f) a voice output unit responsive to said alarm signal of said discriminator means for producing an alarm sound;

whereby warning information is first supplied to the driver in voice-form and then in alarm sound form if the voice warning information is not responded to.

4,359,715

CODED FAILURE INDICATOR FOR AN AIR BAG SYSTEM

Peter Langer, Troy, and Carlos Dominguez, Detroit, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 22, 1980, Ser. No. 219,174

Int. Cl.³ B60R *21/00*

U.S. Cl. 340—52 R **6 Claims**

1. An air bag system for an automobile comprising:

deceleration sensor means for sensing deceleration of the automobile;

air bag means for providing occupant restraint;

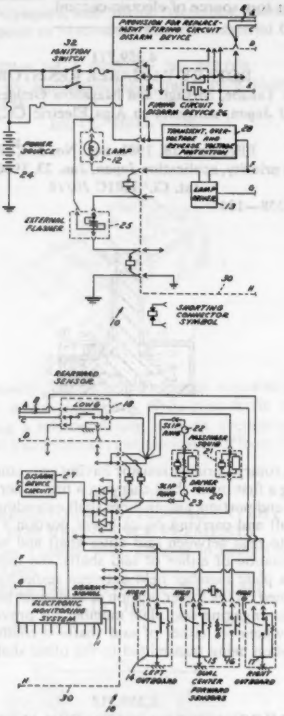
air bag firing means coupled to said air bag means for deploying said air bag means;

diagnostic means coupled to said deceleration sensor means and said air bag firing means for actuating said air bag firing means in response to signals from said deceleration sensor means;

said diagnostic means being coupled to a plurality of different electrical locations in said air bag system to monitor voltage levels at those electrical locations thereby detecting the occurrence of faults at those electrical locations;

indicating means coupled to said diagnostic means for giving a unique coded indication of any of a plurality of faults; and wherein

said diagnostic means associates a unique sequence of equally spaced pulses of an equal duration with a given fault so that a single indicating means can display a plurality of faults by displaying sequences of different length,



each sequence including equally spaced pulses of equal duration.

4,359,716

METHOD AND APPARATUS FOR SENSING AIR PRESSURE IN PNEUMATIC SUSPENSION UNITS FOR VEHICLES

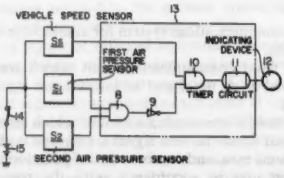
Yukio Miyamaru, Tokyo; Masayuki Kudou, Shiki; Yoshihiro Nakazawa, Asaka, and Osamu Kikuchi, Saitama, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 15, 1980, Ser. No. 186,917

Claims priority, application Japan, Sep. 20, 1979, 54-120980; Jun. 4, 1980, 55-75179

Int. Cl.³ G08B *21/00*; H01H *35/24*

U.S. Cl. 340—60 **12 Claims**



1. A device for ...ng air pressure in pneumatic suspension units for a vehicl... ...d device comprising: air pressure sensor

means for sensing air pressures in pneumatic suspension units to generate an output signal when the air pressures are below a predetermined level; vehicle speed sensor means for sensing vehicle speed to generate an output signal when the vehicle speed exceeds a predetermined level; signal processor means connected to receive output signals from said pressure sensor means and from said vehicle speed sensor means for generating an output when the air pressures in said pneumatic suspension units are below a predetermined level and the vehicle speed continues to be in excess of a predetermined level for more than a predetermined period of time, and indicating means connected to receive an output signal from said signal processor for producing an indicating signal.

4,359,717
POSITION-SENSITIVE ALARM SYSTEM

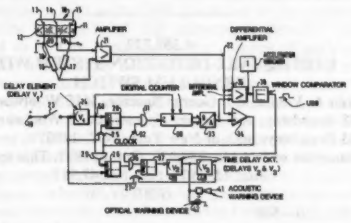
Bernd Huber, Altenberg; Erich Schneider, Kirchheim, and Helmut Fleischer, Niddatal, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 14, 1980, Ser. No. 121,575

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1979, 2913018

Int. Cl.³ B60R *25/10*; G08B *13/00*

U.S. Cl. 340—63 **18 Claims**



1. A vehicle alarm system adapted for installation in a vehicle having

a warning device (**41, 42**) triggerable upon detection of a disturbance to the vehicle and

comprising

at least one position sensitive sensor (**10, 10'**) furnishing repetitively, continuously sequentially position output signals representative of the position of the vehicle on a support surface;

data storage means (**30, 51**) connected to and receiving the position output signals from said sensor, and storing data representative of the position of the vehicle on the support surface;

comparator means (**34, 53**) connected to said data storage means and said position sensitive sensor and receiving stored data indicative of a prior position of the vehicle as represented by a prior position output signal as well as a then furnished position output signal, and comparing said prior and then furnished signals for detecting a deviation of the position output signal furnished by said sensor (**10**) from a stored value retained in the storage means,

said comparator means furnishing a triggering signal to said warning device (**41, 42**) when said deviation of position exceeds a predetermined amount to provide a warning when a disturbance of the position of the vehicle with respect to a prior position on said support surface is sensed by said sensor.

4,359,718
DEVICE FOR SWITCHING TWO DIGITAL TRAINS

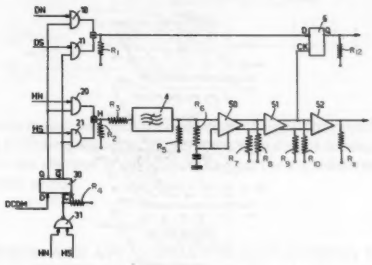
Georges A. Payen, Montrouge, France, assignor to Societe Anonyme de Telecommunications, Paris, France

Filed Jul. 9, 1980, Ser. No. 167,442

Claims priority, application France, Jul. 17, 1979, 79 18479

Int. Cl.³ H04Q *9/00*; H03K *5/13*

U.S. Cl. 340—825.03 **3 Claims**



1. A switching device for transmitting one only of two incoming digital trains in response to a switching demand signal, the digital trains containing identical data signals and clock signals at the same frequency, comprising a switching circuit for the data signals and a switching circuit for the clock signals, and a circuit for controlling the switching circuits which delivers a signal whose changes of state occur, after a change of state of the switching demand signal, only from the moment when the two clock signals are in the same logic state.

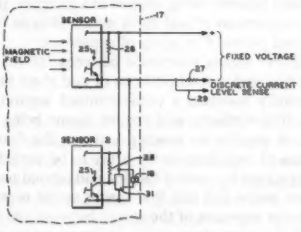
4,359,719
HALL EFFECT ALARM PULL STATION

Rudolf J. Schwarzer, Palatine, Ill., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 6, 1980, Ser. No. 194,532

Int. Cl.³ G08B *17/00*

U.S. Cl. 340—287 **6 Claims**



1. An alarm pull station comprising:

a housing for attachment to a support;

a manually movable member mounted within said housing;

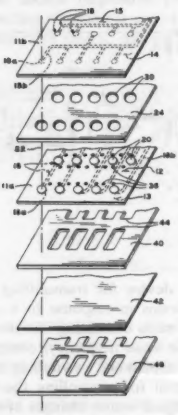
magnet means attached to one of said housing and said manually movable member; and,

Hall effect sensing means attached to the other of said housing and said manually movable member responsive to movement of said magnet means for providing an output signal, said Hall effect sensing means comprising first and second Hall effect sensors arranged for providing three levels of output signal, a first normal level when said manually movable member is in its original, unoperated position, an alarm level when said manually movable member is operated, and a trouble level when said pull station is subjected to tampering.

4,359,720
ENVIRONMENTALLY SEALED VARIABLE CAPACITANCE APPARATUS

Thomas Y. Chai; Franz S. Reisch, both of Freeport, Ill., and M. T. Wu, Madison, Wis., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Apr. 29, 1981, Ser. No. 259,301
Int. Cl.³ G08C *9/02*; H03K *17/96*
U.S. Cl. 340—365 C **23 Claims**



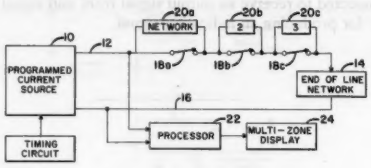
1. A key actuatable capacitive circuit board comprising:
flexible dielectric sheet means having first and second parallel proximate portions each with first and second surfaces arranged so that the first surfaces are adjacent and the second surfaces are separated by at least the first and second portions;
first and second patterns of electrically conductive material on the first surface of the first portion of said sheet means and the second surface of the second portion of said sheet means respectively, selected portions of said first and second patterns being aligned in a direction perpendicular to the portions of said sheet means so as to form first and second plates of an array of capacitors;
first spacer means interposed between the first surfaces of the first and second portions of said sheet means so as to normally maintain a predetermined separation between the first surfaces, said spacer means being of a design which permits the spacing between the first and second plates of capacitors in the array to be varied; and
sealing means for sealing the first and second portions of said sheet means and said first spacer means together so as to prevent exposure of the spaces between the first and second capacitor plates to the environment surrounding said sheet means.

4,359,721
TWO-WIRE MULTI-ZONE ALARM SYSTEM

Aaron A. Galvin, and Roy L. Harvey, both of Lexington, Mass., assignors to American District Telegraph Company, New York, N.Y.

Filed Oct. 16, 1978, Ser. No. 951,765
Int. Cl.³ G08B *25/00, 26/00*
U.S. Cl. 340—525 **3 Claims**

1. For use in a multi-zone alarm system having a two-wire alarm loop, a plurality of alarm sensors each including a pair of alarm switch contacts in series with the loop and the selective opening or closing of which is in response to and signifies an alarm condition, and a processor at a central location coupled to the loop and operative to indicate an alarm condition in response to alarm signals from any of said switch contacts, the improvement comprising:
a current source coupled to the two-wire alarm loop and operative to provide a predetermined current signal in the loop;
a plurality of networks, each connected across a respective pair of alarm switch contacts and operative in response to its switch contact actuation to provide a signal for transmission in the loop to the central location, the signal having a detectable characteristic to denote the identity of the actuated sensor;



circuit means at the central location operative in response to signals from any one or more of the networks to provide a signal indication of the zone in which alarm actuation has occurred;
and wherein said networks each includes an electronic switch in parallel with the associated alarm switch contacts; and
a serially connected resistor and capacitor in shunt with the electronic switch.

4,359,722
EARTHQUAKE DETECTION SYSTEM WITH PENDULUM SWITCH

Alfredo A. Valdez, c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, and George Spector, 3615 Woolworth Bldg., 233 Broadway, both of New York, N.Y. 10007

Continuation of Ser. No. 839,927, Oct. 6, 1977. This application Jun. 12, 1979, Ser. No. 47,917
Int. Cl.³ G08B *21/00*
U.S. Cl. 340—540 **2 Claims**

1. An earthquake alert and fire prevention system comprising a pendulum-actuated switch in series with a relay controlling parallel circuits to an alarm and a house, said relay, in response to the closure of said pendulum switch, being movable from a first position wherein said alarm is inoperative and the house circuit is operative to a second position wherein the alarm circuit is operative and the house circuit inoperative, in further combination with holding circuit means in parallel with said pendulum-actuated switch wherein said switch comprises a base affixed to a rigid support having an enveloping hood, further including an electrically conducting ring electrically connected to said relay mounted on and electrically insulated from said base and further including a pendulum support affixed to said base and extending thereabove having a pendulum disc suspended by a wire conductor therefrom concentrically within said ring, said pendulum having an electrically conducting peripheral annulus electrically connected to said relay via said wire normally spaced from and disposed within said ring,

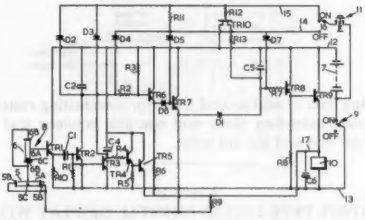
including an additional mass suspended between said support and disc.

4,359,723

PERSONAL MONITORING DEVICE

Ellis B. Cohen, 8 High Park Close, Mountnod, Coventry, England

Filed May 28, 1980, Ser. No. 153,942
Claims priority, application United Kingdom, Jun. 2, 1979, 7919307
Int. Cl.[3] G08B 21/00
U.S. Cl. 340—573 11 Claims



1. A device for monitoring the physical activity of persons comprising a movement detector electrically coupled to drive electrical time-delay means the output of which is connected to drive an alarm device the arrangement being such that the alarm device is held in its OFF condition in the presence of movements detected by the movement detector and is switched to its ON condition in the absence of such movements after a time delay determined by said time delay means, said movement detector comprising at least one tubular housing with a cylindrical side wall closed with end caps and containing a freely movable ball and means operable according to movement of the ball within the housing to establish an electrical signal representative of the physical activity of a said person at an output terminal connected to the input of said time-delay means, wherein said time-delay means comprises first and second time-delay circuits connected in series, the input of the first time-delay circuit being connected to the output terminal of the movement detector and the outputs of each of the first and second time-delay circuits being connected to the alarm device, said first time-delay circuit incorporating a manually-operable reset device and said second time-delay circuit being non-cancellable, the arrangement being such that if the first time-delay circuit activates the alarm the second time-delay circuit provides a time interval prior to its effecting latching of the alarm during which time interval the alarm can be manually cancelled by operation of said reset device, and said first time-delay circuit further includes means for automatically disabling the movement detector during the period that the first time-delay circuit produces a signal to turn on the alarm device.

4,359,724

EYELID MOVEMENT DETECTOR

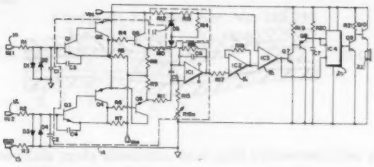
Ronald R. Zimmerman, 302 Foxboro, Saginaw, Mich. 48602, and W. Scott Bartky, Chicago, Ill., assignors to Ronald R. Zimmerman, Flint, Mich.

Filed Apr. 28, 1980, Ser. No. 144,405
Int. Cl.[3] G08B 21/00; A61B 5/04
U.S. Cl. 340—575 18 Claims

1. An eyelid movement detector and warning device which detects movement of an individual's eyelid comprising:

means for sensing eyelid movement and for providing a detection signal in response to the occurrence of eyelid movement;

means for comparing said detection signal to a threshold signal and for producing a control signal in response to a characteristic of said detection signal being different from a corresponding characteristic of said threshold signal; and



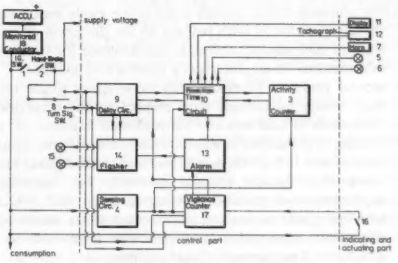
timing means responsive to said control signal for producing a switching signal to trigger a warning device in response to the absence of said control signal for a predetermined time period.

4,359,725

METHOD AND APPARATUS FOR MONITORING THE ALERTNESS OF THE DRIVER OF A VEHICLE

György Balogh; Miklos Hajnal; Laszlo Vajta; Istvan Lovanyi, and Laszlo Csenki, all of Budapest, Hungary, assignors to Elektromobil Elektroes Jarmuipari Szovetkezet, Gyor, Hungary

Filed Dec. 1, 1980, Ser. No. 212,192
Claims priority, application Hungary, Nov. 29, 1979, BA 3893
Int. Cl.[3] G08B 21/00
U.S. Cl. 340—576 14 Claims



1. A method for monitoring the alertness of the driver of a vehicle having an independent power source and traveling on an unbounded path, comprising continuously measuring the electrical consumption of a driven vehicle; giving signals to the driver, which signals require a response from the driver, in the event the electrical consumption of the vehicle remains substantially constant for more than a predetermined period of time, thereby indicating monotonous driving conditions; measuring the speed and accuracy of the responses of the driver to said signals; and giving an alarm when the speed and accuracy of the driver's response are below a predetermined level.

4,359,726

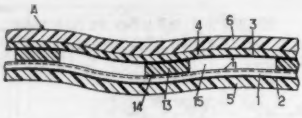
COMPOSITE SHEETS CONSTITUTING ELECTROMECHANICAL TRANSDUCERS AND TRANSDUCERS EQUIPPED WITH SUCH SHEETS

Jacques Lewiner, 5, rue Bory d'Arnex, 92210 Saint-Cloud, and Claude Hennion, 18, rue Flatters, 75005 Paris, both of France

Filed Jan. 27, 1981, Ser. No. 228,716
Claims priority, application France, Feb. 12, 1980, 80 03093
Int. Cl.[3] G08B 21/00
U.S. Cl. 340—666 12 Claims

1. Relatively flexible and extended composite sheet, consti-

tuting an electromechanical transducer and comprising a foil sensitive to pressure in the sense of electromechanical transduction, said pressure sensitive foil being interposed between two conductive foils or electrodes themselves covered exter-



nally with protective foils, said composite sheet also comprising, between the pressure sensitive foil and one of the protective foils, spacing shims of which the two opposite surfaces are glued respectively to the two opposite adjacent areas.

4,359,727

DETECTOR OF DEFECTIVE COATING

Gene S. Oliver, 10661 Ponder Way, San Diego, Calif. 92126

Filed Aug. 25, 1980, Ser. No. 180,896
Int. Cl.³ G08B 21/00
U.S. Cl. 340—675 **3 Claims**

1. A detector for detecting defects comprising the absence of an insulated coating on a conductive member passed through the detector, the detector comprising:

a first plurality of electrically conductive guide means transversely positioned with respect to the direction of movement of said member through said detector for supporting said member in an electrically conductive manner;

a second plurality of electrically conductive guide means transversely positioned with respect to the direction of movement of said member through said detector for supporting said member in an electrically conductive manner, each of said first guide means and said second guide means comprising flexible arcuate electrode for tangentially supporting said member passing through said detector, said first guide means and said second guide means being alternately arranged in said positions transverse to the direction of movement of said member:

means for applying an electrical charge of a first polarity to each of said first guide means and a second electrical charge of the opposite polarity to each of said second guide means and

means electrically connected to said first guide means and to said second means for detecting a current flowing between a pair of adjacent first guide means and second guide means responsive to an uninsulated area of said member simultaneously electrically contacting one of said first guide means and one of said second guide means.

4,359,728

METHOD AND MEANS FOR MINIMIZING DISTORTION IN TELEVISION DISPLAY

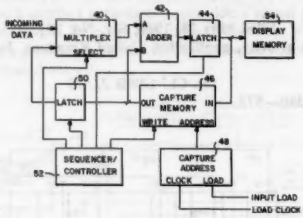
John E. Mahony, Sacramento, Calif., assignor to General Electric Company, Rancho Cordova, Calif.

Filed Nov. 3, 1980, Ser. No. 203,657
Int. Cl.³ G09G 1/16
U.S. Cl. 340—747 **6 Claims**

1. In a television display system in which video magnitude data is stored as digital data in a display memory for control of the television display, a method of controlling raster line display illumination for interconnecting first and second points identified by coordinates along two axes comprising the steps of

identifying the midpoint along one axis between said first and second points,

storing midpoint data for illuminating raster line points extending along said one axis between said first point and said midpoint, and



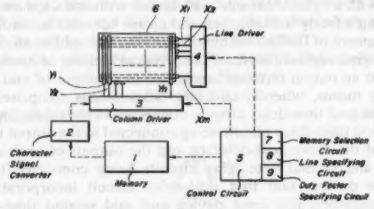
storing data of said second point for illuminating raster line points extending along said one axis between said midpoint and said second point.

4,359,729

MATRIX TYPE LIQUID CRYSTAL DISPLAY WITH FACULTIES OF PROVIDING A VISUAL DISPLAY IN AT LEAST TWO DIFFERENT MODES

Keisaku Nonomura, Nara; Keiichiro Shimizu, and Hisashi Uede, both of Yamatokoriyama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Oct. 17, 1978, Ser. No. 952,206
Claims priority, application Japan, Oct. 18, 1977, 52/125508
Int. Cl.³ G09G 3/36
U.S. Cl. 340—765 **9 Claims**



1. A display device capable of displaying a plurality of display patterns, comprising:

a liquid crystal cell having an xy matrix electrode structure including a predetermined number of x electrodes and a predetermined number of y electrodes arranged in an opposed orientation relative to said x electrodes;

driving means for sequentially driving said liquid crystal cell by sequentially applying a voltage pulse to each of said predetermined number of x electrodes or to each of said predetermined number of y electrodes;

display pattern selecting means for selecting one of said plurality of display patterns for display purposes on said liquid crystal cell;

electrode selecting means for specifying a selected number of said electrodes being driven by said driving means for driving purposes in accordance with said one of said plurality of display patterns selected by said display pattern selecting means; and

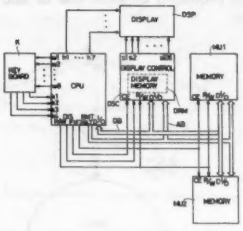
duty factor specifying means for selectively changing the period of time during which said voltage pulse is applied to each of said selected number of said electrodes specified by said electrode selecting means in accordance with the selected number of said electrodes specified by said electrode selecting means.

4,359,730

ALPHANUMERIC DISPLAY CONTROLLED BY MICROPROCESSOR

Akihiko Kunikane; Shintaro Hashimoto, both of Ikoma; Satoshi Teramura, Kashihara; Kunihiro Kobayashi, Nara, and Tetsuo Iwase, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Oct. 30, 1980, Ser. No. 202,704
Claims priority, application Japan, Oct. 30, 1979, 54-140788
Int. Cl.³ G09G 3/04
U.S. Cl. 340—792 4 Claims



1. An information display for displaying information messages such as sentences and data whose units are groups of characters defining words, comprising:

display means having a certain digit capacity for displaying selected portions of an information message;

information source means for supplying said information;

first storage means including first and second memory means for receiving and storing said information from said information source means with interposition of at least one specific signal defining a blank between each adjacent word;

second storage means having specific storage regions corresponding to the respective digits of said display means for sequentially receiving an initial portion of said information message corresponding to that number of digits and the balance of said information thereafter in a word by word sequence;

means for fetching said initial portion and said balance of said information from said first storage means and sequentially presenting same to said second storage means character by character; and

control means responsive to the number of characters in each said word of said balance of information for constraining specific digit positions to be provided by said display means beginning with one side thereof and corresponding to the number of said characters in said word and to its position in said message to be first unoccupied and then filled with a complete word of said information from said second storage means and shifting the initial portion and previously displayed words from said balance of said message to provide said specific digit positions for each successive word to be displayed until said message has been displayed in full by said display means;

said first memory means initially containing said information message and said second memory means being interconnected between said first memory means and said second storage means; and

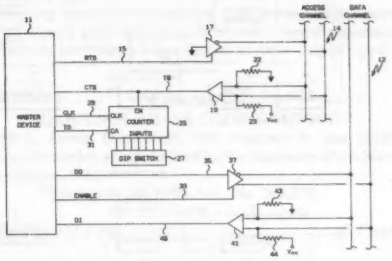
said control means further including counting means responsive to the number of characters in each said characters in each said word in the balance of said information message transferred from said first memory means to said second memory means for determining the number of specific digit positions required by each such word on said display means.

4,359,731

COMMUNICATION LINK CONTENTION RESOLUTION SYSTEM

Martin H. Beauford, and Thomas V. Fritts, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 22, 1980, Ser. No. 180,253
Int. Cl.³ H04Q 9/00; H04J 3/16
U.S. Cl. 340—825.51 10 Claims



1. Apparatus for sychronizing access to a data communication link between a plurality of programmable master devices which each have the capability of initiating a data transaction on said data communication link, said apparatus comprising:

an access channel communication link;

means for interfacing each one of said programmable master devices to said access channel in such a manner that each one of said programmable master devices can both determine the state of said access channel and control the state of said access channel, wherein said access channel has a first state when any one of said programmable master devices desires to initiate a data transaction and has a second state when none of said programmable master devices desires to initiate a data transaction;

a plurality of timer means, each one of said plurality of timer means being associated with a respective one of said programmable master devices;

means for setting each one of said plurality of timer means to a different time when any one of said programmable master devices desires to initiate a data transaction and drives said access channel to said first state, the time to which each one of said plurality of timer means is set being determined by the priority of the programmable master device with which the timer means is associated;

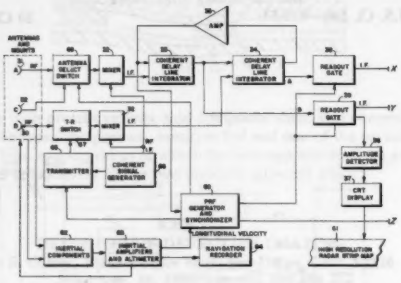
means for supplying a clock signal to each one of said timer means, all of said clock signals having the same frequency, all of said timer means counting at the same rate when said access channel is released to said second state after being driven to said first state to set each one of said plurality of timer means to a different time;

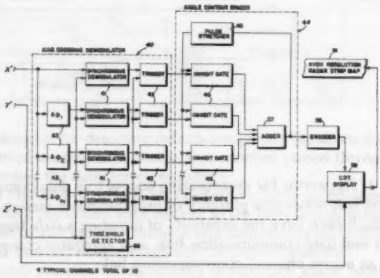
means for informing each one of said programmable master devices when its associated timer means has timed out, wherein the different times at which said plurality of timer means were set provides a unique time slot for each one of said programmable master devices to gain control of said data communication link to execute a data transaction if a higher priority programmable master device has not already gained control of said data communication link.

4,359,732
TOPOGRAPHICAL MAPPING RADAR

Gregory L. Martin, Phoenix, Ariz., assignor to Goodyear Aerospace Corporation, Akron, Ohio

Filed Nov. 21, 1963, Ser. No. 326,321
Int. Cl.[3] G01S 13/89
U.S. Cl. 343—5 CM 9 Claims





1. In a terrain contour mapping system in an aircraft, the combination of

a dipole radar antenna consisting of two vertically spaced fan beam antenna poles mounted on the aircraft,

means to transmit radar signals at a depressed angle from the antenna in directions normal to the flight path of the aircraft,

means to measure and record the phase difference in the radar signals received at the two poles of the antenna when the signals are reflected from the earth,

an inertial system to measure and record airborne platform orientation and position,

means to combine the orientation and position information with the recorded radar information, and

ground stationed means adapted to receive the combined information to provide a three coordinate output signal which determines points on a map representing the contour of the terrain flown over by the aircraft.

4,359,733
SATELLITE-BASED VEHICLE POSITION DETERMINING SYSTEM

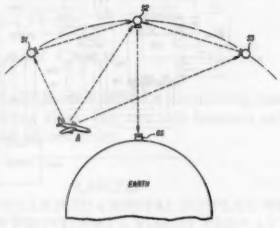
Gerard K. O'Neill, 127 McCosh Cir., Somerset County, Princeton, N.J. 08540

Filed Sep. 23, 1980, Ser. No. 189,744
Int. Cl.[3] G01S 13/78
U.S. Cl. 343—6.5 LC 49 Claims

1. A system for determining the positions of a plurality of vehicles traveling on or above a defined sector of the earth's surface, comprising:

(a) a transponder carried by each one of said vehicles for transmitting, in response to a general interrogation signal directed to said plurality of vehicles, a beacon signal coded with information uniquely identifying said one vehicle, said transponder including means reponsive to said general interrogation signal for inhibiting the transmission of further beacon signals by said transponder for a predetermined time interval following the response of said transponder to said general interrogation signal;

(b) three satellites at spaced orbital locations above the earth, each of said satellites carrying repeater means for receiving and retransmitting the beacon signals transmitted by said vehicle transponders, said three satellites thereby collectively producing three retransmitted beacon signals for each beacon signal produced by each one of said vehicle transponders; and



(c) a ground station for periodically transmitting said general interrogation signal and for receiving and processing said retransmitted beacon signals, said ground station including:

(1) means for detecting the arrival time of each retransmitted beacon signal at the ground station;

(2) means for detecting the vehicle identifying information carried by each retransmitted beacon signal; and

(3) means for calculating the instantaneous position of each one of said vehicles within said sector based upon the time of transmission of the interrogation signal from the ground station and the arrival times of the three retransmitted beacon signals which carry vehicle identifying information identifying said one vehicle.

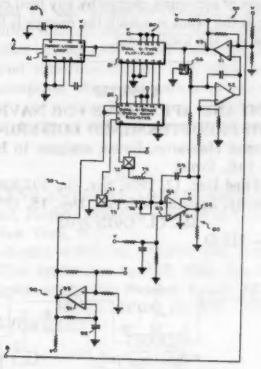
4,359,734
SIGNAL PROCESSING SYSTEM

Wesley J. Bachman, Auburn, Ill., assignor to Dickey-john Corporation, Auburn, Ill.

Continuation of Ser. No. 821,651, Aug. 4, 1977, abandoned. This application Jan. 31, 1979, Ser. No. 8,057
Int. Cl.[3] G01S 7/34, 13/58
U.S. Cl. 343—8 23 Claims

1. In a velocity detecting system in which detector means are utilized for developing an electrical information signal having a characteristic that varies systematically in accordance with the velocity of an object subject to detection, an improved system for processing said electrical velocity information signal, comprising: converter means coupled to said detector means and responsive to said velocity information signal characteristic for developing an oscillatory signal having a value which varies in accordance with said velocity information signal characteristic; filter means, including a phase-locked loop circuit operated with a relatively long time constant to prevent said phase-locked loop circuit from locking, having a variable center value and responsive to said oscillatory signal for filtering all values other than said center value, said center value varying in accordance with said value of said oscillatory signal; and signal generating means responsive to the value of the signal passed by said filter means for generat-

ing an output signal having a value which is a preset ratio relative to said center value, whereby the output signal of the



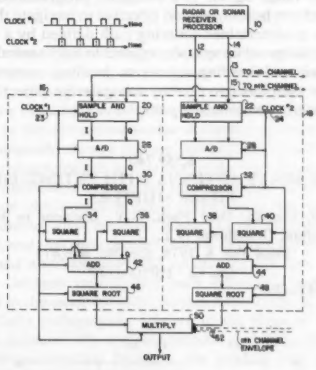
system is relatively noise free and has a value which represents the predetermined velocity for the object being detected.

4,359,735

MULTI-SAMPLING-CHANNEL PULSE COMPRESSOR

Bernard L. Lewis, Oxon Hill, and Frank F. Kretschmer, Jr., Laurel, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 6, 1980, Ser. No. 206,130
Int. Cl.³ G01S *13/28*
U.S. Cl. 343—17.2 PC **13 Claims**



10. A low-sidelobe pulse compression processor for reducing the processing loss in echo signals caused by sampling time errors and for improving range resolution comprising:

means for receiving an echo signal from an energy transmission and generating I and Q baseband signals from said echo signal;

n signal processing channels, where n is an integer >2, wherein said first signal processing channel comprises:

first sampling means for sampling said I and Q signals in accordance with pulses from a first clock signal having a predetermined sampling frequency;

first means for compressing said I and Q signals from first sampling means;

first means for generating the signal envelope for said compressed I and Q signals from said first compressing means;

and wherein said i th signal processing channel, where $1 \leqq i \leqq n$, comprises:

i th sampling means for sampling said I and Q signals in accordance with pulses from an i th clock signal having said predetermined sampling frequency but with said i th clock pulses interlaced, in time, with said first clock signal pulses such that said i th clock signal pulses are $(i)(360°)/(n)$ out of phase with said first clock pulses;

i th means for compressing said i th clock sampled I and Q signals from said i th sampling means;

i th means for generating the signal envelope for said compressed I and Q signals from said i th compressing means; and

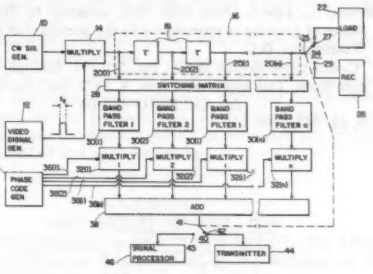
multiplying means for multiplying together the output envelope signals generated in each of said n signal processing channels to obtain a low-sidelobe narrow output signal.

4,359,736

FREQUENCY-PHASE CODING DEVICE

Bernard L. Lewis, Oxon Hill, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 24, 1980, Ser. No. 209,370
Int. Cl.³ G01S *13/28*
U.S. Cl. 343—17.2 PC **15 Claims**



1. A doppler tolerant pulse-compression-code generator for generating approximately orthogonal codes comprising:

means for generating a signal pulse of bandwidth B;

delay means with n signal taps spaced by equal delays τ for delaying the pulse generated by said pulse generating means by a series of equal delay increments;

n bandpass filter channels approximately covering said bandwidth B such that each bandpass filter passes a different set of spectral lines;

means for connecting each one of said n signal taps to a different one of said n bandpass filter channels;

a phase coding circuit in each bandpass filter channel for phasing coding the signal passed by its respective bandpass filter channel; and

means for adding the phase-coded signals from said n bandpass filter channels to form an orthogonal pulse.

4,359,737

ARTIFICIAL TREES FOR ABSORBING AND SCATTERING RADIATION

John W. Bond, Churchton, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 26, 1981, Ser. No. 228,394
Int. Cl.³ H01Q *17/00*
U.S. Cl. 343—18 A **11 Claims**

1. Countermeasures apparatus for attenuating the flow of multi-spectral radiation of at least first and second wavelengths

from a target to detectors thereof, said countermeasures apparatus comprising:

(a) an artificial tree adapted to be readily mounted upon the target and including a plurality of leaves disposed between

the target and the sensors, said artificial tree made of a dielectric material; and

(b) means disposed on said leaves for attenuating said radiation of each of said first and second wavelengths, thereby preventing detection of the target by the sensors.

4,359,738

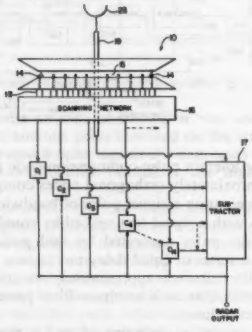
CLUTTER AND MULTIPATH SUPPRESSING SIDELOBE CANCELLER ANTENNA SYSTEM

Bernard L. Lewis, Oxon Hill, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation-in-part of Ser. No. 528,193, Nov. 25, 1974, abandoned. This application Aug. 9, 1977, Ser. No. 824,574

Int. Cl.³ H01Q *109/06*

U.S. Cl. 343—100 LE **16 Claims**



1. An apparatus for processing signals from a multiple interference source environment comprising:

a single, circular, symmetric lens member formed from a pair of substantially identically shaped, circular, electrically conductive plates the peripheries of which are flared and from a lens comprising a circular slab of dielectric material of approximately the same radius as that of the unflared portions of said plates, said dielectric lens being placed between and separating said plates so that the flared ends form a waveguide horn, said lens being concentric with said plates; and

a plurality of loosely coupled feed elements disposed symmetrically around the periphery of said lens,

said dielectric lens being coupled directly to any impinging electromagnetic wave energy without the intervening action of any said feed element and focusing the energy of any electromagnetic plane wave at a focal point near its periphery opposite the point at which the plane wave energy first strikes the lens,

said loose coupling of said feed elements preventing high absorption of incoming energy by any feed element except that one at the point at which the energy is focused or the two flanking the focal point.

4,359,739

METHOD AND APPARATUS FOR NAVIGATION THROUGH PREDETERMINED LOITERING PATHS

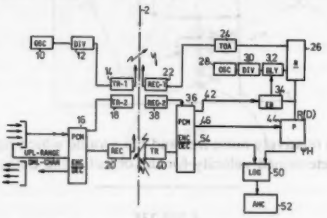
Dan Noy, Ramat Hasharon, Israel, assignor to Israel Aircraft Industries, Ltd., Israel

Filed Dec. 12, 1979, Ser. No. 102,938

Claims priority, application Israel, Dec. 15, 1978, 56215

Int. Cl.³ G01S *3/02*

U.S. Cl. 343—112 D **14 Claims**



1. A method of navigating an object through a loitering path with respect to a central station, characterized in that said central station transmits omnidirectional timing signals for use in determining range therefrom; and in that the object being navigated receives said timing signals and produces range signals therefrom indicating its range from the central station, inputs said range signals to a computer programmed to produce therefrom heading signals effective to navigate the object through a predetermined loitering path defined by a continuous closed-loop curve spatially related to said central station, and applies said heading signals to heading control means carried by the object to thereby navigate the object through said predetermined loitering path.

4,359,740

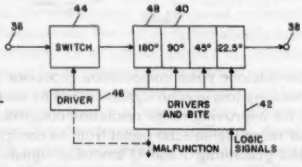
PHASED ARRAY ANTENNA WITH EXTINGUISHABLE PHASE SHIFTERS

Richard F. Frazita, Deer Park, N.Y., assignor to Hazeltine Corporation, Greenlawn, N.Y.

Filed Feb. 6, 1978, Ser. No. 875,471

Int. Cl.³ H01Q *3/30*

U.S. Cl. 343—703 **1 Claim**



1. In a phased array antenna having a plurality of antenna elements and a coupling network, including phase shifters, for supplying radio frequency (RF) wave energy signals to said elements, apparatus for cutting off the supply of RF signals to said elements through a malfunctioning phase shifter comprising:

means associated with each of said phase shifters for detecting phase shifter malfunction;

means for generating an output signal representative of said malfunction; and

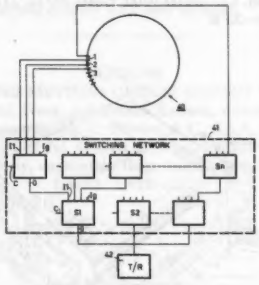
switch means associated with each of said phase shifters and responsive to said output signal for preventing passage of RF signals to said elements through a malfunctioning phase shifter, wherein each of said phase shifters is a diode phase shifter having a 180° phase shifter bit, including first and second reflective diodes, and wherein said switch means comprises the combination of said 180° phase shifter bit and means for driving said first and second reflective diodes to different conductive states.

4,359,741

LENS ANTENNA ARRANGEMENT

Knut E. Cassel, Jarfalla, Sweden, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 118,814, Feb. 5, 1980, Pat. No. 4,309,710. This application Apr. 28, 1980, Ser. No. 144,728
Claims priority, application Sweden, Feb. 6, 1979, 7901046
Int. Cl.³ H01Q *19/06*
U.S. Cl. 343—754 **6 Claims**



1. A lens antennas arrangement, operable within the microwave range, comprising a round disc-shaped lens element with a radially varying refraction index, covered on at least one of the major sides by a conductive plane, and including feeders located at the circumference for reception or transmission of electromagnetic energy passing through the disc-shaped lens element, characterized in that the feeders are directive dipole feeders distributed around the circumference of the lens element, said dipole feeders being shaped such that each feeder has a limited lobe directed diametrically through the lens element, and that each dipole feeder is located in a plane which is inclined approximately 45° relative to the lens plane, all feeders—as seen radially for each individual feeder—being inclined in the same direction so that each feeder is polaraized substantially orthogonally relative to the plane of the feeder situated diametrically opposite thereto, switching means being electrically-connected between the feeders and means for selectively activating the feeders.

4,359,742

DUAL SWITCH MULTIMODE ARRAY ANTENNA

Peter W. Smith, Westport, Conn., assignor to United Technologies Corporation, Hartford, Conn.

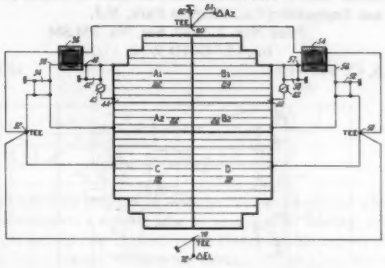
Filed Dec. 23, 1980, Ser. No. 219,745
Int. Cl.³ H01Q *13/10*
U.S. Cl. 343—768 **9 Claims**

1. An array antenna connectable to an input/output port forming an aperture to transmit or receive radar signals, said array antenna being switchable between at least two modes, comprising:

aperture means divided into four quadrants, two of said quadrants forming the upper portion of said aperture means, and two of said quadrants forming the lower portion of said aperture;

a feed means connected between said input/output port and said aperture means, including a first power divider means connected to divide the energy of an illuminating radar signal between, or for combining the energy of a received radar signal from, two of said quadrants forming the left-half and the right-half of said aperture;

azimuth monopulse difference port means connected to said first power divider;



switch means connected between said first power divider means and the said quadrants forming each half of said aperture, said switch means having a first and second position; and

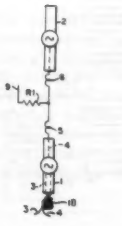
whereby with each of said switch means in said first position, said input/output port is connected such that a radar signal is either presented to, or received from, all of the said quadrants equally, however, with said switch means in said second position, said input/output port is connected to only at least a portion of two quadrants forming one-half of said aperture means.

4,359,743

BROADBAND RF ISOLATOR

Charles M. DeSantis, Neptune, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation-in-part of Ser. No. 60,956, Jul. 26, 1979, abandoned. This application May 5, 1981, Ser. No. 260,630
Int. Cl.³ H01Q *1/52*
U.S. Cl. 343—792 **17 Claims**



1. A broadband RF isolator system comprising:

at least one RF device;

said RF device including a conductive RF shield means for reducing the effects of RF fields on a portion of said RF device;

said RF device having means for inducing stray RF currents on the outside surface of said shield means;

isolator means coupled to said shield means for suppressing said stray RF currents;

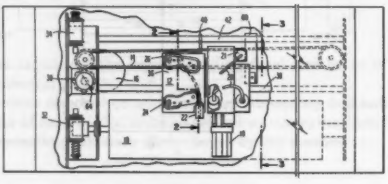
said isolator means including a first conductor and a resistor;
said first conductor and said outside surface of said shield means forming a transmission line means of substantial electrical length; and
said resistor connected between said shield means and said first conductor and having an impedance substantially equal to the characteristic impedance of said transmission line means.

4,359,744

INK JET PRINTER WITH PERISTALTIC PUMP

William Salmre, Norwalk, Conn., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Nov. 3, 1980, Ser. No. 203,584
Int. Cl.³ G01D *9/32, 15/16*
U.S. Cl. 346—1.1 **15 Claims**



1. Ink jet apparatus comprising:
an ink jet including an orifice adapted to project droplets of ink therefrom, a chamber coupled to said orifice and a transducer communicating with said chamber to change the volume of said chamber and project droplets in response to said change;
an ink reservoir;
an elongated and flexible capillary coupling means having a passageway connecting said ink jet and said reservoir; and
peristaltic means cooperating with said coupling means to create a constriction therein and advance said constriction along a length of said coupling means.

4,359,745

CATHODE RAY TUBE DISPLAY APPARATUS

Dean F. Reid, Englewood, Colo., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jul. 30, 1980, Ser. No. 173,854
Int. Cl.³ G01D *9/00*
U.S. Cl. 346—23 **5 Claims**

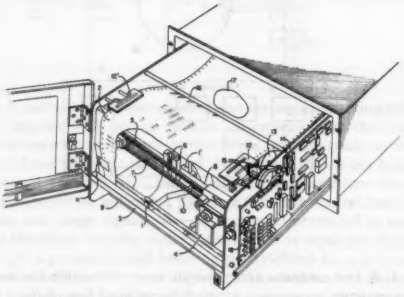
1. A cathode ray tube recording system wherein a cathode ray tube has a face plate and a narrow band of active recording area on said face plate with a correspondingly narrow band of phosphor on the inner surface of said face plate across which a cathode ray beam is caused to sweep, said system, in combination with said tube, comprising:
signal receiving and conditioning means connected to receive signals for recording and to produce corresponding control signals,
control means connected to be responsive to said control signals for controlling intensity modulations of said cathode ray beam in accordance with said control signals, to produce data trace signals at said tube face plate;
grid line signal generating means for generating periodic grid line signals, said grid line signal generating means being also connected to control means to superimpose grid line traces on said data traces at said tube face plate;
a ramp signal generating means connected to said tube to cause said cathode ray beam to periodically sweep across said tube face plate; and
a random bias signal generating means connected to said ramp signal generating means for applying a randomly selected bias signal to said ramp signal generator to shift the timing of resultant ramp signals relative to said tube face plate.

4,359,746

ZERO LEVEL CORRECTION APPARATUS

Robert E. Goldschmidt, Needham; Charles C. Ku, Acton, and David A. Townzen, Winchester, all of Mass., assignors to Kaye Instruments, Inc., Bedford, Mass.

Division of Ser. No. 71,947, Sep. 4, 1979, Pat. No. 4,329,693.
This application Apr. 22, 1981, Ser. No. 256,571
Int. Cl.³ G01D *9/00;* **G01G** *19/52, 23/14*
U.S. Cl. 346—33 R **5 Claims**



1. For use with printing apparatus and the like for recording digital data generated from analog input voltages supplied to an input of the printing apparatus from sensing means, zero level correction apparatus for correcting for zero-offset of the digital data generated from such analog input voltages comprising means for periodically connecting the input to one of known zero voltage, means for storing a multiplicity of the resulting digital values, means for averaging the values thus stored to determine an offset value, and means for digitally subtracting the same from the digital data generated from said analog input voltages from the sensing means when connected to said input.

4,359,747

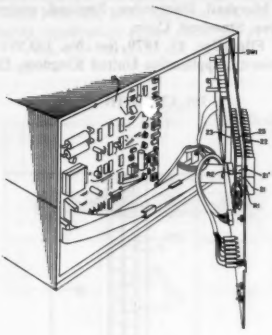
THERMOCOUPLE RECORDER

Robert E. Goldschmidt, Needham; Charles C. Ku, Acton, and David A. Townzen, Winchester, all of Mass., assignors to Kaye Instruments, Inc., Bedford, Mass.

Division of Ser. No. 71,947, Sep. 4, 1979, Pat. No. 4,329,693.
This application Apr. 22, 1981, Ser. No. 256,572
Int. Cl.³ G01D *9/00;* **G01K** *7/12*
U.S. Cl. 346—33 TP **5 Claims**

1. For use with printing apparatus and the like for recording digital data generated from analog inputs from a plurality of temperature sensing elements such as thermocouples, apparatus wherein said analog inputs are supplied to a printed circuit board by a multiplicity of printed circuit board mounting screw terminals having shafts, means for maintaining the mounting screw terminals with substantial equality of tempera-

ture comprising a central bar of high thermal conductivity having opposing flat surfaces provided with a thin layer of



electrical insulation, and with the screw terminal shafts bonded in intimate thermal contact with said surfaces.

4,359,748

DEVICE AND METHOD OF NON IMPACT PRINTING

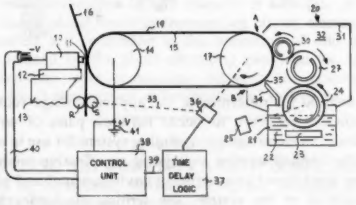
Arnaldo Pasini, Ivrea, and Franco Knirsch, Banchette, both of Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy

Filed Jul. 8, 1980, Ser. No. 166,982

Claims priority, application Italy, Jul. 9, 1979, 68420 A/79

Int. Cl.³ G01D *15/10*

U.S. Cl. 346—76 PH **6 Claims**



1. A thermal non impact printer for printing information on an information support, of the type in which an inking substance including carbon powder and a binder comprising artificial waxes is deposited on a movable carrier, said deposited substance being transferred from the carrier onto said information support under the heating action of a set of selectively energizable printing elements adjacent to said support, and a regeneration unit for renewing said inking carrier which is formed of a loop on a flexible ribbon, said unit including a pair of carrier feeding rollers and engaging said carrier to hold this latter in contact with said support, means for rotating at least one of said rollers for moving said carrier, a container for containing said inking substance, a plurality of mutually contacting inking rollers, a first one of said inking rollers being at least partially immersed in the inking substance of said container, another of said inking rollers being in contact with said carrier in correspondence of one of said carrier feeding rollers, means for continuously rotating said inking rollers to pick said inking substance from said container and meter same on said carrier, heating means for heating said inking substance on said container, and a chamber closed by said one carrier feeding roller for housing said container, said inking rollers and said heating means for keeping them substantially at a constant temperature inspective of the outside temperature.

4,359,749

RECORDING MEDIUM AND METHOD FOR MAKING A RECORD ON THE RECORDING MEDIUM

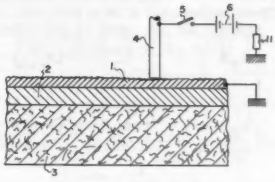
Manfred Schiekel, Ulm, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs-GmbH, Fed. Rep. of Germany

Filed Jan. 16, 1981, Ser. No. 225,659

Claims priority, application Fed. Rep. of Germany, Jan. 19, 1980, 3001884

Int. Cl.³ G01D *15/34*

U.S. Cl. 346—135.1 **16 Claims**



1. A recording medium of the type having a first coat which is discolorable in a limited area by area-limited heating, comprising, a second coat applied on the first coat, said second coat comprising a material which has heat-conducting and electrically insulating properties, and a third coat applied on said second coat, said third coat comprising a material which is electrically conductive, and said third coat being removable in a limited area by the action of an electric arc which is limited in time and area and wherein said second coat is more resistant to the action of said electric arc than said first coat so that it is not markedly removed by the action of said arc.

4,359,750

OPTICAL DISC STRUCTURE

Dennis G. Howe, Pittsford, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 30, 1981, Ser. No. 259,127

Int. Cl.³ G01D *15/34*

U.S. Cl. 346—135.1 **11 Claims**

1. In an optical disc of the type having a recording stratum including a thermally deformable recording layer overlying a reflectively surfaced support, the improvement wherein said support surface is crenelated, having a plurality of substantially continuous and uniform-depth grooves and interleaved lands arranged in a spiral or concentric pattern, and said recording stratum has a nominally planar outer surface whereby the thickness of recording stratum portions respectively overlying grooves and lands of said support surface differ in accordance with said groove depth.

4,359,751

STEPPER MOTOR FOR DATA RECORDER

Robert E. Goldschmidt, Needham Heights; Charles C. Ku, Acton, and David A. Townzen, Winchester, all of Mass., assignors to Kaye Instruments, Inc., Bedford, Mass.

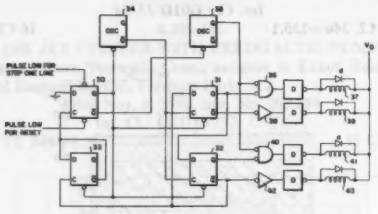
Division of Ser. No. 71,947, Sep. 4, 1979, Pat. No. 4,329,693. This application Apr. 22, 1981, Ser. No. 256,586

Int. Cl.³ G01D *15/24;* **G05B** *19/40*

U.S. Cl. 346—136 **5 Claims**

1. For use with apparatus of the character described or the like, stepping motor and drive apparatus having, in combina-

tion, stepping motor means having a rated input voltage, a rated input power, and a rated torque, and pulse-width modulated drive circuit means for applying to the stepping motor means voltage pulses having a first pulse width for stepping the motor means and having a substantially narrower pulse width when the motor means is stationary in order to provide lower



power consumption when the stepping motor means is stationary than when moving, the voltage pulses having a magnitude that is substantially greater than the rated input voltage and sufficient to permit the stepping motor means to be operated at higher than rated torque while not exceeding time-averaged rated input power.

4,359,752

MAGNETO-FLUIDIC RECORDING APPARATUS

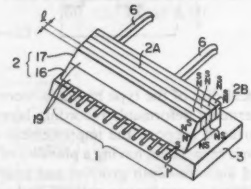
Masami Nakagawa, Kadoma; Wataru Shimotsuma, Ibaraki; Yoshio Kishimoto, and Yoichi Sekine, both of Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Oct. 21, 1980, Ser. No. 199,362

Claims priority, application Japan, Oct. 24, 1979, 54-137124; Oct. 24, 1979, 54-137125; Oct. 24, 1979, 54-137128

Int. Cl.³ G01D *15/16*

U.S. Cl. 346—140 R **14 Claims**



1. A magneto-fluidic recording apparatus comprising:

a magnetic multi-stylus head arranged parallel to and opposed to a recording plane having a first end proximal to a recording plane;

supply means for supplying magneto-fluidic material from a magneto-fluidic material source to said multi-stylus head,

a magnet having at least one supply surface for receiving a supply of magneto-fluidic material from said supply means, said magnet being arranged on said multi-stylus head near said first end of said multi-stylus head,

means for selectively flinging magneto-fluidic material on said multi-stylus head onto a recording plane, and

at least three magnetic poles providing concentrated lines of magnetic force arranged continuously on said supply surface of said magnet.

4,359,753

MAINTAINING PASCHEN BREAKDOWN VOLTAGE IN ELECTROGRAPHIC PRINTING

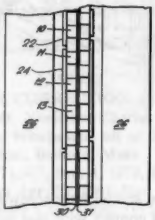
Richard C. Marshall, Harpenden, England, assignor to Xerox Corporation, Stamford, Conn.

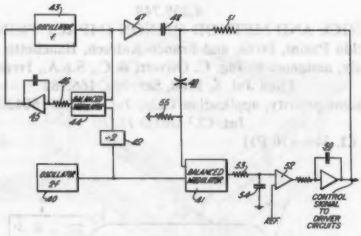
Filed Dec. 17, 1979, Ser. No. 103,991

Claims priority, application United Kingdom, Dec. 21, 1978, 49531/78

Int. Cl.³ G11B *15/60*

U.S. Cl. 346—153.1 **8 Claims**





1. A method for determining the applied voltage required for Paschen breakdown to occur between pairs of writing electrodes in an electrographic printing system for use in maintaining the applied writing voltage at an effective minimum operating level based upon existing environmental and physical conditions of the system, the writing electrodes being electrically addressed with an applied voltage having an operating frequency at the Paschen breakdown voltage to form a latent image on a recording medium moving relative to and adjacent to the electrodes, the voltage at which Paschen breakdown occurs being accompanied by an abrupt change in current flow due to the appearance or disappearance of harmonic currents, the method comprising the steps of

providing in said system a set of test electrodes having a test gap adjacent to said recording medium, said test electrodes capable of indicating operating characteristics comparable to the writing electrodes,

generating a harmonic signal, said harmonic signal having a frequency that is a multiple integer of said operating frequency,

applying a sinusoidal voltage across said test gap at said operating frequency, the applied voltage being initially synchronized relative to said harmonic signal,

monitoring the applied sinusoidal voltage across said test gap to detect an abrupt appearance or disappearance of a harmonic current at said test gap corresponding in frequency to said harmonic signal, and

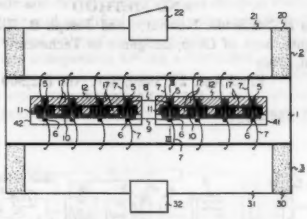
measuring the magnitude of the applied sinusoidal voltage corresponding to the amplitude of said harmonic current developed across the test gap at the time of said abrupt change.

4,359,754

SEMICONDUCTOR DEVICE

Masahiro Hayakawa, Kawasaki, and Yutaka Hirano, Atsugi, both of Japan, assignors to Fujitsu Limited, Hanagawa, Japan

Filed Mar. 28, 1980, Ser. No. 135,182
Claims priority, application Japan, Mar. 30, 1979, 54-38227
Int. Cl.³ H01L 25/04, 23/48
U.S. Cl. 357—22 6 Claims



1. A semiconductor device comprising

a base,

a plurality of chips mounted on said base, each said chip comprising at least one selected plurality of corresponding circuit elements, said corresponding circuit elements being present on each said chip,

a respective external common electrode mounted on said base corresponding to each said selected plurality of corresponding circuit elements on said chips,

a respective plurality of connecting wires for individually connecting in parallel each of said selected plurality of corresponding circuit elements to the respective external common electrode, and

at least one bonding wire for directly connecting between two selected ones of the corresponding circuit elements on different ones of said chips of at least one of said selected pluralities of corresponding circuit elements,

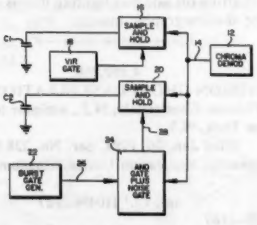
wherein self oscillation in the operation of said device is reduced by the short circuiting provided by each said bonding wire connecting between the corresponding circuit elements on different ones of said chips.

4,359,755

GATING NETWORK FOR A SAMPLING CIRCUIT

Gopal K. Srivastava, Buffalo Grove, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Filed Feb. 9, 1981, Ser. No. 232,792
Int. Cl.³ H04N 9/535; H03K 5/00, 5/18
U.S. Cl. 358—21 V 9 Claims



1. A gating network for selectively activating and deactivating a sampling circuit which receives an input signal having a sampling component to be sensed, comprising:

a pulse generator for generating an enabling pulse which is in time synchronism with the sampling component;

biasing means;

an AND gate responsive to the enabling pulse and the signal containing the sampling component, the AND gate being biased by said biasing means such that it is responsive only to a sampling component of a selected amplitude so as to generate a control signal whose duration is shorter than both the sampling component and the enabling pulse; and

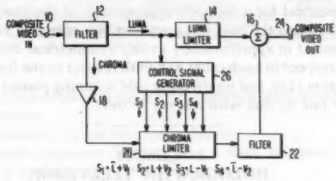
means for coupling the control signal to the sampling circuit to enable the latter circuit in synchronism with the sampling component.

4,359,756

CHROMINANCE SIGNAL LIMITER

Dennis M. Schneider, Carmel, and John G. Amery, Danville, both of Ind., assignors to RCA Corporation, New York, N.Y.

Filed Jun. 29, 1981, Ser. No. 278,662
Int. Cl.³ H04N 9/535, 9/493
U.S. Cl. 358—27 10 Claims



1. A video signal limiter, comprising:

input filter means for receiving a composite video input signal and producing separated luminance and chrominance signals;

control signal generator means responsive to said luminance signal for producing four control signals, first and fourth ones of said control signals having an AC component inversely proportional to said luminance signal, second and third ones of said control signals having an AC component directly proportional to said luminance signal, each control signal having a respective DC component;

regulator means in said generator means for regulating the DC components of the first and third control signals in proportion to a first reference voltage and for regulating the DC components of the second and fourth ones of said control signals in proportion to a second reference voltage;

circuit means for limiting excursions in a first sense of said chrominance signal to the lesser in said first sense of said first and second control signals and for limiting excursions in a second sense of said chrominance signal to the lesser in said second sense of said third and fourth control signals to provide a symmetrically limited chrominance output signal; and

means for combining said symmetrically limited chrominance output signal with said luminance signal to provide a composite video output signal.

4,359,757

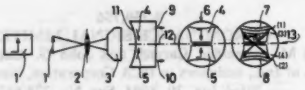
METHOD FOR THE OPTO-ELECTRONIC TRANSMISSION OF AN IMAGE ORIGINAL

Walter Jaeger, Cureglia, Switzerland, assignor to GX-Holding AG., Basel, Switzerland

Continuation-in-part of Ser. No. 71,074, Aug. 30, 1979, Pat. No. 4,301,467. This application Nov. 25, 1980, Ser. No. 210,215
Claims priority, application Switzerland, Nov. 29, 1979, 10615/79
Int. Cl.³ H04N 9/04
U.S. Cl. 358—49 8 Claims

1. In a system for optoelectronic transmission of an image original (1) radiated in at least two beams having wave-length distributions which differ from each other by being simultaneously projected through a lens (2) and an optical image splitter (3) to form two adjacent images (4,5) on a photosensi-

tive coating surface (11) of photoelectric transducer means (6), the method of converting the two images (4,5) into two electric video signals (9,10) by raster scanning of the photosensitive coating surface (11) of the photoelectric transducer means (6), including the steps of: generating the two images (4,5) adjacently disposed in surface aligned, mirror image configuration on said surface (11) in axial symmetry with respect to each



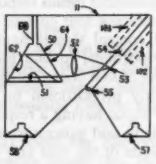
other and with respect to a line scanning direction (13) establishing brightness distributions for the two images that are symmetrical for a monochrome version of the image original (1); scanning the two images along two scanning rasters (7,8) positioned in approximately axially symmetrical configuration with respect to each other and with respect to the line scanning direction (13); and interlinking said scanning rasters with each other line by line with respect to time.

4,359,758

HOLOGRAPHIC TELEVISION

George Teacherson, P.O. Box 762, Palm Beach, Fla. 33480

Filed Apr. 5, 1979, Ser. No. 27,303
Int. Cl.³ H04N *9/54*; G03H *1/22*
U.S. Cl. 358—90 3 Claims



1. A three-dimensional (3D) television (TV) picture receiving system including cabinet, said single cabinet adapted to completely house said receiving system comprising:

an image producing device for producing an electronically received image;

means for mounting said image producing device within said cabinet;

said image producing device being a cathode ray tube (CRT);

said CRT having a full-silvered, light reflecting side internal of said tube and a light transparent side opposite to said full-silvered side for transmitting said produced image off to the side of said CRT while retaining said image within the confines of said cabinet, said cabinet adapted to mount said CRT off to one side of the other components mounted therewithin;

a reconstructing plate mounted within said cabinet for display of the image produced by said CRT;

means for mounting said reconstructing plate internal to the said cabinet;

at least one device for producing coherent light;

means for mounting therewithin said cabinet said light device;

one said mounting means for each said light device;

said mounting means adapted to allow said components to shine said coherent light upon said image being displayed upon with reconstructing plate;

magnifying lens for externally presenting said internally received and reconstructed 3D TV picture to a viewer;

means for mounting said lens to perform said function;

a minimum of one audio speaker to provide sound simultaneously to the picture; and

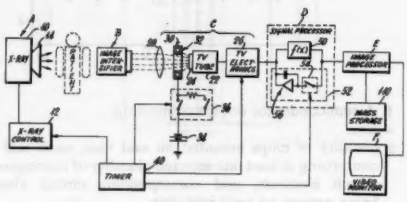
means for mounting said speaker, one means for each speaker extant, to allow said speaker to perform said function.

4,359,759

BIAS LIGHTING IN A RADIOGRAPHIC APPARATUS AND METHOD

Thomas R. McBride, Newbury, and Joseph B. Richey, Shaker Heights, both of Ohio, assignors to Technicare Corporation, Solon, Ohio

Filed Apr. 21, 1980, Ser. No. 142,500
Int. Cl.³ H04N *7/18*
U.S. Cl. 358—111 7 Claims



1. In an apparatus for performing dynamic image enhancement of a portion of a subject into which a contrast agent is introduced during a diagnostic procedure, which apparatus comprises a television camera for successively generating frames of video data for producing x-ray shadowgraphic images of the subject, said television camera including a light sensitive target for receiving shadowgraphic images for converting to video data, analog to digital converting means for converting the video data from the television camera into digital video data, first memory means for storing at least one frame of video data representing a first shadowgraphic image, said first memory means being operatively connected with said analog to digital converting means, a second memory means for storing at least a second frame of video data representing a second shadowgraphic image, said second memory means being operatively connected with said analog to digital converting means, and means for subtractively combining the video data stored in said first and second memory means to produce video data representing a differential image of the difference between the first and second shadowgraphic images, the improvement comprising a bias lighting means for preilluminating said target before said target receives the shadowgraphic image for conversion into said video data and means for shutting off said bias lighting means while said target receives the shadowgraphic image.

4,359,760

TELEVISION GHOST CANCELLATION SYSTEM

David D. Holmes, Chesterfield, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jan. 26, 1981, Ser. No. 228,593
Claims priority, application United Kingdom, Aug. 14, 1980, 8026515
Int. Cl.³ H04N *5/21*
U.S. Cl. 358—167 3 Claims

1. In a television receiver, including a source of video signals which may be contaminated with a ghost signal, said video signals including a component subject to use as a training signal, a television ghost cancellation system comprising:

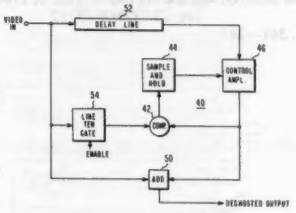
means responsive to said video signal and having an output for passing a portion of said video signals which includes a ghost of said training signal when a ghost signal is present;

a delay line, having an inut coupled to receive said video

signals, and an output at which delayed video signals are produced, and exhibiting a delay which is substantially equal to the delay of the ghost signal of said training signal with respect to said training signal when a ghost signal is present;

means having an input coupled to the output of said delay line, and an output at which modified delayed video signals including said training signal are produced, and responsive to a control signal for controllably modifying the amplitude and or the polarity of said delayed video signals to produce said modified delayed video signals to produce said modified delayed video signals;

an amplitude comparator having a first input coupled to the output of said video signal portion passing means and a second input coupled to the output of said delayed video signal modifying means, and having an output at which an



error signal is produced which is representative of the amplitude and polarity difference between said ghost signal of said training signal and said modified delayed training signal;

a sample-and-hold circuit having an input coupled to the output of said amplitude comparator and an output coupled to said modifying means, for sampling said error signal to develop a control signal for said modifying means so as to produce a modified delayed training signal which is substantially equal to amplitude and opposite in polarity to said ghost signal of said training signal; and

a combining circuit having a first input coupled to said video signal source and a second input coupled to the output of said modifying means for combining said video signals with said modified delayed video signals to produce deghosted video signals.

4,359,761

ELECTRIC MOTOR WITH MULTIPLE SHAFTS

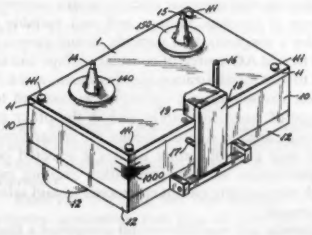
Georg Papst, St. Georgen, Fed. Rep. of Germany, assignor to Papst Motoren KG, St. Georgen, Fed. Rep. of Germany

Filed Jul. 23, 1979, Ser. No. 59,681

Claims priority, application Switzerland, Jul. 27, 1978, 8080/78; Sep. 21, 1978, 9857/78

Int. Cl.³ G11B *15/32;* **H02K** *16/00*

U.S. Cl. 360—96.3 **14 Claims**



1. A multiple shaft driving apparatus comprising a single base plate formed with a plurality of recesses opening into a major surface of the plate; said plate being of a magnetic material; a plurality of electric motors having the shafts of their armatures arranged for rotation in respective recesses; and the stators of said motors being formed by the walls of said recesses and being magnetically interconnected by said plate.

4,359,762

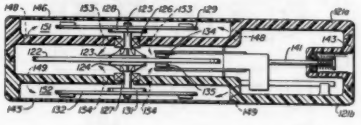
REMOVABLE STORAGE MODULE AND MODULE

Herbert R. Stollorz, 77 Mercedes La., Atherton, Calif. 94025

Filed May 13, 1980, Ser. No. 149,329

Int. Cl.³ G11B *5/012, 23/02*

U.S. Cl. 360—98 **9 Claims**



1. A storing device for signals representing data, comprising in combination

a removeable storage module including

a sealed enclosure for enclosing a shaft mounted inside said enclosure,

a storage disk mounted on said shaft, having a plurality of storage tracks for storing data,

transducer means for reading or writing data in said storage tracks,

positioning means including

transducer support means for moving said transducer means to a selected one of said storage tracks;

a magnetic coupling disk mounted on said shaft and concentrically connected to said storage disk;

said enclosure providing a magnetic field permeable cover over said magnetic coupling disk;

and a storage module drive including

means for receiving said storage module,

means for rotating said storage disk in said enclosure including

means for generating a rotating magnetic field, said field permeating said cover and providing motive force for rotating said magnetic coupling disk and said storage disk of said storage module;

and actuator means for operating said positioning means inside said enclosure.

4,359,763

FLOPPY DISC DRIVE

Paul R. Hoffman, Exton, Pa., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

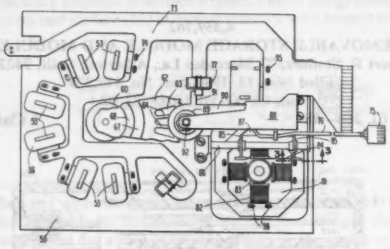
Continuation-in-part of Ser. No. 19,901, Mar. 12, 1979, Pat. No. 4,275,426. This application Aug. 4, 1980, Ser. No. 174,921

Int. Cl.³ G11B *5/016, 5/54, 21/08*

U.S. Cl. 360—99 **12 Claims**

1. A floppy disc drive assembly having a disc drive for rotating a floppy disc at a predetermined speed and a recording head drive for positioning a recording head relative to said rotated disc, characterized by a recording head drive means comprising a step motor for providing rotational movement, and a coupling mechanism for coupling said recording head to said step motor so as to provide movement to said recording head which is radial relative to said floppy disc, said coupling mechanism comprising rotatable drive means coupled to said stepper motor, band means having ends substantially fixed relative to the recording head and movable relative to said stepper motor and an intermediate portion wrapped around said drive means for producing linear motion, and spring means for holding said band in friction contact with said drive means under spring tension, wherein said recording head has

integrally connected thereto a zero track detector for detecting when said recording head is at a zero track position and



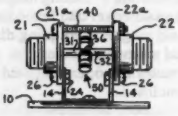
wherein said disc drive comprises a motor having a plurality of stator poles, each of said poles having a pole piece formed from and an integral part of the disc drive assembly housing.

4,359,764

CONNECTOR FOR ELECTROMAGNETIC IMPULSE SUPPRESSION

Roger R. Block, 4712 S. Wind Blvd., Kissimmee, Fla. 32741

Filed Apr. 8, 1980, Ser. No. 138,354
Int. Cl.³ H02H *3/22*
U.S. Cl. 361—119 **20 Claims**



1. An electrical surge suppressor for dissipating electromagnetic impulse energy along a radio frequency signal transmission line of the type having primary and secondary conductors and a known characteristic impedance therebetween, the suppressor comprising in combination:

paired first and second electrical connectors each having primary and secondary conductors for being operatively interposed along the primary and secondary conductors of the radio frequency signal transmission line;

discharge means for defining a known breakdown voltage and a known capacitance between first and second sections thereof; and

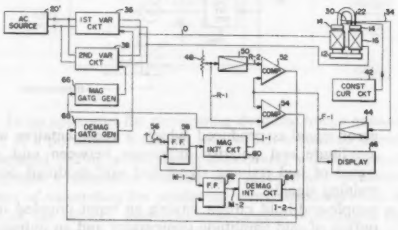
mounting means for electrically coupling said first section of said discharge means between said primary conductors of said first and second electrical connectors and for electrically coupling said second section of said discharge means between said secondary conductors of said first and second electrical connectors, with said mounting means having a known inductance which interacts with said capacitance of said discharge means and any stray capacitance of the combination thereof to produce a characteristic impedance which is generally equal to the characteristic impedance of the radio frequency signal transmission line whereby the suppressor will shunt electrical surges while normally representing a low standing wave ratio for radio frequency energy transmitted along the transmission line.

4,359,765

MAGNETIZING SYSTEM

Katsura Mimura, and Kazuo Tsugawa, both of Kobe, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 10, 1980, Ser. No. 205,595
Claims priority, application Japan, Feb. 5, 1980, 55/13332
Int. Cl.³ G01R *33/12*
U.S. Cl. 361—147 **26 Claims**



1. A magnetizing system for magnetizing a magnetic workpiece to the desired magnitude, comprising a variable electric source, magnetization exciting means excited by said variable electric source to generate a magnetic flux in a direction in which said magnetic workpiece is magnetized or demagnetized, a sensor circuit including magnetically sensitive means for producing an output in response to a quantity of magnetization of said magnetic workpiece to sense said quantity of magnetization of said magnetic workpiece, a comparison circuit connected to said sensor circuit to compare the sensed result with a reference to produce an output in accordance with the result of the comparison, and a control circuit responsive to said output from said comparison circuit to control the excitation of said excitating means;

wherein said variable electric source comprises of a constant electric source and a variable circuit connected to the output of said constant electric source;

and wherein said constant electric source comprises an AC source of constant voltage and said variable circuit comprises a semiconductor element phase-controlled by said control circuit;

and wherein said constant electric source comprises an AC source of constant voltage and said variable circuit includes a magnetization variable circuit connected at one end to said AC source of constant voltage and at the other end to said magnetization exciting means and a demagnetization variable circuit connected at one end to said AC source of constant voltage and at the other end to said demagnetization exciting means, the arrangement being so that, said control circuit excites a selected one of said magnetization an demagnetization exciting means thorough the variable circuit connected to said selected exciting means;

and wherein said variable circuit comprises a thyristor;

and wherein said magnetization variable circuit is formed of an unidirectional thyristor and said demagnetization variable circuit comprises a bidirectional thyristor.

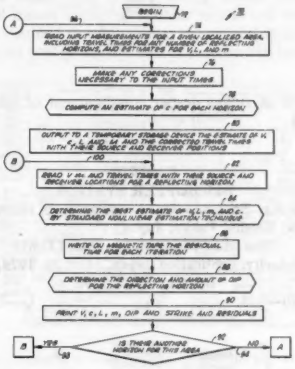
4,359,766
METHOD FOR RECONNAISSANCE GEOPHYSICAL PROSPECTING

Kenneth H. Waters, P.O. Box 289, Kaw City, Kay County, Okla. 74641; George W. Rice, 1624 Dover, Ponca City, Kay Couty, Okla. 74601; Anthony J. Scanlan, 6518 Coral Ridge, Houston, Harris County, Tex. 77069, and Beverly B. Stebens, 1505 Trio La., PoncaCity, Kay County, Okla. 74601

Continuation-in-part of Ser. No. 174,744, Aug. 15, 1971, abandoned. This application Jul. 26, 1976, Ser. No. 708,437

Int. Cl.³ G01V *1/20, 1/30*

U.S. Cl. 367—38 **24 Claims**


BEGIN
READ INPUT MEASUREMENTS FOR A GIVEN LOCALIZED AREA, INCLUDING TRAVEL TIMES FOR ANY NUMBER OF REFLECTING HORIZONS, AND ESTIMATES FOR V₀, c, AND m
MAKE ANY CORRECTIONS NECESSARY TO THE INPUT TIMES
COMPUTE AN ESTIMATE OF c FOR EACH HORIZON
OUTPUT TO A TEMPORARY STORAGE DEVICE THE ESTIMATE OF V₀ AND c, AND THE CORRECTED TRAVEL TIMES WITH THEIR SOURCE AND RECEIVER POSITIONS
READ V₀, m, AND TRAVEL TIMES WITH THEIR SOURCE AND RECEIVER LOCATIONS FOR A REFLECTING HORIZON
DETERMINE THE BEST ESTIMATE OF V₀, c, m, AND ε, BY STANDARD NON-LINEAR ESTIMATION TECHNIQUE
WRITE ON MAGNETIC TAPE THE RESIDUAL TIME FOR EACH ITERATION
DETERMINE THE DIRECTION AND AMOUNT OF DIP FOR THE REFLECTING HORIZON
PRINT V₀, ε, L, c, m, DIP AND STRIKE AND RESIDUALS
IS THERE ANOTHER HORIZON FOR THIS AREA
YES
NO
A
B

12. In a method of collecting and processing seismic energy data for selected substrata underlying an earth location where said data is collected by cross-pattern energization of plural seismic energy sources in linear, equi-spaced array which is positioned generally perpendicular to said source array, each of said energy sources and receivers having a known location relative to an origin, the method of processing said seismic energy data by performing the following steps:

assembling seismic energy trace data for a selected substrata as received by said plural seismic energy receivers for each of said energized seismic energy sources thereby to define reflection times for a quadrature array of energy reflection point groups at said substrata; and

performing the following steps with automatic computing apparatus;

producing parameter signals representing parameters defining, relative to said origin, a plane which best fits said defined reflection times for and is common to said energy reflection point groups at said substrata, said plane thereby representing the configuration of a portion of the selected substrata including said energy reflection point groups; and

providing output indication of the attitude and azimuth of said best fit plane to provide the dip and strike of said portion of the selected stratum.

4,359,767
ULTRASONIC ARRAY

Bertram Sachs, Erlangen; Jacques Borburgh, Poxdorf, and Ingmar Feigt, Erlangen, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

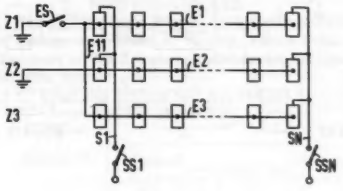
Filed Feb. 27, 1981, Ser. No. 238,938

Claims priority, application Fed. Rep. of Germany, Mar. 17, 1980, 3010210

Int. Cl.³ G01S *7/52*

U.S. Cl. 367—105 **13 Claims**

1. An ultrasonic array comprising an arrangement of transducer elements in rows and columns, said transducer elements having opposite contact surfaces at opposite sides thereof, electrical contact means in electrical contact with said opposite contact surfaces of said transducer elements, and switch means being associated with the electrical contact means and being operative for forming preselectable transducing surfaces from the transducer elements during a transducing cycle, in particular for the purpose of dynamic focusing, said contact surfaces of said transducer elements (2) comprising row-connecting contact surfaces and column-connecting surfaces, said electrical contact means comprising row contact means for connecting the row-connecting contact surfaces in a direction along the rows (Z1 through Z3) and comprising column contact



means for connecting the column-connecting contact surfaces in a direction along the columns (SP1 through SPN) to define respective row and column groups of transducer elements, said switch means comprising at least one row group switch (ES1 through ES3, or ES, respectively) for controlling activation of at least one row group, and comprising column group switches (SS1 through SSN) for controlling activation of the column groups, transverse contacting means (E11) electrically connecting respective contact means of a plurality of groups, and said switch means comprising an individual switch (ES) for actuation to control joint activation of the contact means (E1, E3), of said plurality of groups.

4,359,768
VERTICAL TRACKING ANGLE METER

Louis A. Abbagnaro, Shelton, and Arthur J. Gust, Greenwich, both of Conn., assignors to CBS Inc., New York, N.Y.

Filed Apr. 6, 1981, Ser. No. 251,601

Int. Cl.³ G11B *27/36, 3/06*

U.S. Cl. 369—55 **10 Claims**

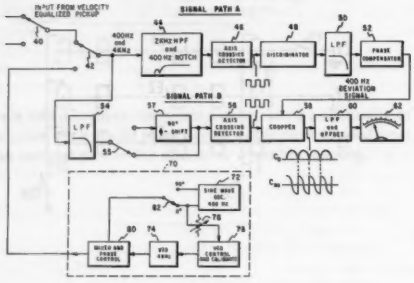
1. Apparatus for use with a test record having a test signal recorded thereon consisting of low and high audio frequency sinusoidal signals differing in frequency by a factor of about ten recorded together with a known recording angle, for measuring at least the tracking angle of a phonograph pickup during playback of said test signal, said apparatus comprising:

means for applying the test signal transduced from the test record by the pickup under measurement to first and second signal paths,

said first signal path including discriminator means for producing a deviation signal at said low frequency of amplitude proportional to the frequency deviation produced at the stylus tip of said pickup due to mismatch between the tracking angle of said pickup and said known recording angle and to tracing distortion, and

said second signal path including filter means for passing substantially only the low frequency signal transduced from said test record, and means for converting said low frequency signal to a square wave signal which is either in phase or 180° out of phase with respect to said deviation signal when said deviation is due to mismatch between said recording and tracking, angles and which is in quadrature phase relationship with respect to said deviation signal when said deviation is due to tracing distortion;

means for combining said deviation signal and said square wave signal and producing an output signal which has the characteristics of a full-wave rectified sine wave in response to components of said deviation signal that are



either in phase or in phase opposition with respect to said square wave signal and amplitude proportional to the degree of mismatch between said recording and tracking angles, and which is symmetrical and changes polarity each cycle of said square wave signal in response to components of said deviation signal that are in quadrature phase relationship with said square wave signal;

a voltmeter calibrated to display at least the peak deviation of said deviation signal; and

means connected between said signal combining means and said voltmeter for coupling to said voltmeter only a resultant signal of finite value proportional to the amplitude of an output signal having the characteristics of a full-wave rectified sine wave.

4,359,769

SIGNAL REPRODUCTION APPARATUS

Kazuhiko Sano, Suita, and Shoji Ohmiya, Shijyonawate, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed May 5, 1980, Ser. No. 146,250

Claims priority, application Japan, May 8, 1979, 54-55985; Oct. 22, 1979, 54-136743; Nov. 26, 1979, 54-163847

Int. Cl.³ G11B *3/58*

U.S. Cl. 369—74 **10 Claims**

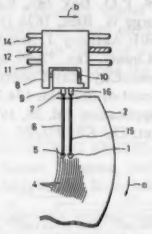
1. A signal reproduction apparatus comprising:

a driving means for rotating a record disk having a large number of engraved grooves as record tracks,

a pick-up means comprising a playback stylus for tracing on said engraved grooves of said record disk thereby reproducing electrical signals responding to said engraved grooves,

a shaving means comprised of a hard material for abutting on only the top portions of a predetermined number of ridges formed between said engraved grooves, and

a carrying means for moving said pick-up means and said shaving means in such a manner that said playback stylus traces along said engraved grooves after said shaving means runs on said top portions of said engraved grooves, and wherein the abutting surface of said shaving means has a curved edge of a circular arc form such that said shaving means abuts the top portions of the same predetermined



number of ridges despite misalignment of said carrying means.

4,359,770

BIT BUFFER SYSTEM

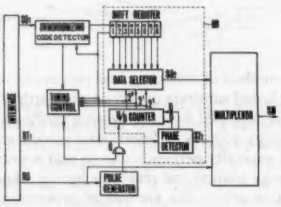
Kazuo Suzuka, Sayama, Japan, assignor to Hitachi Denshi Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 24, 1980, Ser. No. 133,611

Claims priority, application Japan, Mar. 26, 1979, 54-34339

Int. Cl.³ H04J *3/06*

U.S. Cl. 370—108 **10 Claims**



1. In a bit buffer system wherein transmission data signals are sequentially stored in a shift register with a predetermined number of stages, the transmission data signal is taken out from a substantially central one of the predetermined number of stages of said shift register upon initialization to be sent to a receiving unit, the phase difference between the timing pulse controlling the period of said transmission data signal and the timing pulse controlling the operation of said receiving unit is detected to select a specified stage of said register so as to take out said transmission data signal therefrom according to a detected phase difference, the improvement which comprises means detecting a specified code contained in said transmission data signal for carrying out said initialization.

4,359,771

METHOD AND APPARATUS FOR TESTING AND VERIFYING THE OPERATION OF ERROR CONTROL APPARATUS WITHIN A MEMORY

Robert B. Johnson, Billerica, and Chester M. Nibby, Jr., Peabody, both of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Jul. 25, 1980, Ser. No. 172,486

Int. Cl.³ G06F *11/10*

U.S. Cl. 371—13 **40 Claims**

1. A dynamic semiconductor memory system coupled to a bus for receiving memory commands, said memory system comprising:

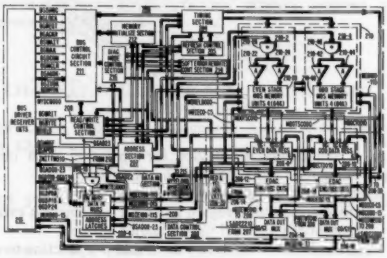
a dynamic memory including a number of addressable arrays in a number of rows and columns;

error detection and correction circuit means coupled to said memory for detecting and correcting single bit errors in the contents of the cells read out from said memory during a memory cycle of operation;

timing means for providing sequences of timing signals for performing said memory cycle of operation;

refresh and write control means coupled to said timing means, said refresh control and write control means, for periodically generating refresh command signals and counting sequentially through all of the row and column addresses at a first predetermined rate in response to signals from said timing means; and,

rewrite control means coupled to said refresh and write control means and to said timing means, said rewrite control means including counter means and test control means coupled to said counter means and to said refresh and write control means, said counter means being operative in response to said refresh command signals to condition said timing means to perform rewrite cycles of operation at a second predetermined rate which is slower than said first predetermined rate for detection and correction of said single bit errors by said error detection and correction means of the contents of the cells within the rows and columns specified by said refresh and write control means; and,



diagnostic mode control means coupled to said bus, said error detection and correction means and to said test control means, said diagnostic mode control means being operative in response to a predetermined type of memory command to condition said test control means to cause said rewrite control means to perform rewrite cycles of operation at said first predetermined rate enabling rapid verification of the proper operation of said rewrite control means.

4,359,772

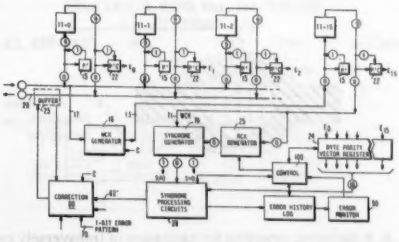
DUAL FUNCTION ERROR CORRECTING SYSTEM

Arvind M. Patel, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 14, 1980, Ser. No. 206,779

Int. Cl.³ G06F *11/10*

U.S. Cl. 371—39 **37 Claims**



1. In combination, a memory system having M failure independent storage units, each of which is adapted to store one byte of a data word having M-1 data byte positions and one ECC check byte position, each said byte position having b bits, said memory having a random single-bit failure rate which is at least two orders of magnitude higher than the failure rate for multi-bit errors in the same byte position of successive words caused by one of said units failing, and

a dual function ECC system for alternately correcting said single random 1-bit errors or said multi-bit errors from a failed unit by processing the same single syndrome byte in one word to correct both types of errors when the location in the data word of the defective byte is known and in another mode to correct single random 1-bit errors when the location of the defective byte is not known.

4,359,773

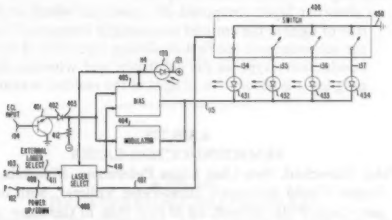
SEMICONDUCTOR LASERS WITH SELECTIVE DRIVING CIRCUIT

Robert G. Swartz, Highlands; Ping K. Tien, Chatham Township, Morris County, and Bruce A. Wooley, Tinton Falls, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jul. 7, 1980, Ser. No. 166,045

Int. Cl.³ H01S *3/10*

U.S. Cl. 372—26 **13 Claims**



1. A light source for a communication system comprising a first semiconductor laser **(431)** for producing an output light the intensity of which is dependent on the value of current in the first semiconductor laser, a photodetector means **(120)** positioned with respect to said first semiconductor laser so as to develop an output current that is representative of the light intensity developed by said first semiconductor laser, means **(405)** for biasing said semiconductor laser at a threshold current in response to the output current of said photodetector means, means **(404)** for modulating current in said semiconductor laser in response to an input signal CHARACTERIZED IN THAT said light source further includes at least a second semiconductor laser **(432)**, and means **(406** and **408)** for activating said second semiconductor laser and deactivating said first semiconductor laser.

4,359,774

LIGHT EMITTING DEVICE

Gregory H. Olsen, Plainsboro, and Dan Botez, Mt. Holly, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Nov. 4, 1980, Ser. No. 204,056

Int. Cl.³ H01S *3/19*

U.S. Cl. 372—45 **9 Claims**

1. In a light emitting device comprising:

a semiconductor substrate having two major surfaces;

a first confining layer, overlying a first major surface of the substrate;

an active layer overlying the first confining layer;

a second confining layer overlying the active layer;

a capping layer overlying the second confining layer;

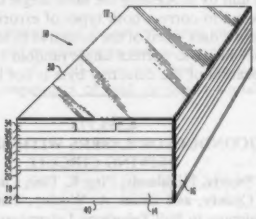
an electrical isolation layer overlying the capping layer and having an opening therethrough wherein the capping layer is exposed;

an electrically conducting layer overlying the capping layer

in the opening in the isolation layer whereby electrical contact is made to the capping layer; and

an electrically conducting layer overlying the second major surface of the substrate whereby electrical contact is made to the substrate;

wherein the substrate and the first confining layer are of one conductivity type and the second confining layer and the capping layer are of the opposite conductivity type; and



wherein the substrate and the first and second confining layers are composed of a material transparent at the wavelength of a light beam emitted by the device;

the improvement which comprises:

an absorber layer composed of a material which is absorptive of light at the emitted wavelength interposed between the substrate and the first confining layer and of the same conductivity type as the substrate; and wherein the capping layer is absorptive of light at the emitted wavelength.

4,359,775

SEMICONDUCTOR LASER

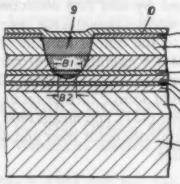
Peter Marschall, Neu-Ulm; Klaus Petermann, Blaustein/Herrlingen; Ewald Schlosser; Hans-Peter Vollmer, both of Ulm, and Claus Wölk, Erbach, all of Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 15, 1980, Ser. No. 178,568

Claims priority, application Fed. Rep. of Germany, Aug. 16, 1979, 2933035

Int. Cl.³ H01S 3/19

U.S. Cl. 372—45 **13 Claims**



1. In a semiconductor laser consisting of a crystal having a sequence of layers forming a heterostructure diode and including a laser active zone interposed between a pair of semiconductor layers, each having a band gap greater than that of any layer within said laser active zone, the improvement wherein:

said laser active zone includes a first semiconductor layer having a given band gap, and at least second and third semiconductor layers each having a band gap which is greater than that of said first layer, said first layer being contiguous with and interposed between semiconductor layers each having a band gap which is greater than that of said first layer and forming a pn-function with one of said contiguous layers;

said improvement further comprising a strip-shaped region of a uniform conductivity type diffused from the surface of said crystal, said region penetrating into at least one layer of said laser active zone but not into said first layer.

4,359,776

DEVICE FOR GENERATING OR AMPLIFYING COHERENT ELECTROMAGNETIC RADIATION, AND METHOD OF MANUFACTURING THE DEVICE

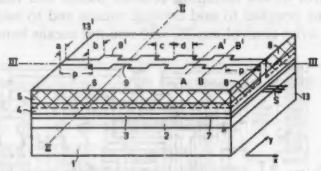
Gerard A. Acket; Peter J. de Waard; Giok D. Khoe; Gijsbrecht C. Wirtz, all of Eindhoven, Netherlands, and Tullio E. Rozzi, Wirrat, England, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 18, 1979, Ser. No. 49,778

Claims priority, application Netherlands, Nov. 8, 1978, 7811085; Jan. 29, 1979, 7900668

Int. Cl.³ H01S 3/19

U.S. Cl. 372—46 **12 Claims**



1. A semiconductor device for operation with coherent electromagnetic radiation, which comprises:

a semiconductor body having a major surface;

a strip-shaped active region having a p-n junction extending substantially parallel to said major surface;

a contact member on each side of said p-n junction to supply current to said junction, one of said contact members comprising an electrode layer which is located on said major surface above said strip-shaped active region, said electrode layer forming a current supply contact with a conductive part of said major surface within a strip-shaped contact region above said active region; and

means for providing a spatially periodic amplification variation in portions of said active region in the wavelength range of said radiation over at least a part of its total length in the longitudinal direction, the period of said amplification variation being at least ten times the wavelength of said radiation within the semiconductor material and at most equal to one-fifth of the length of said active region, said portions of the active region having a common center line in the longitudinal direction.

4,359,777

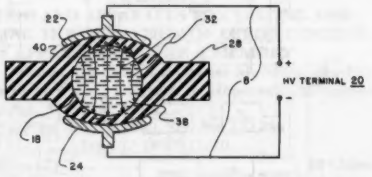
HIGH EFFICIENCY TRANSVERSELY EXCITED ELECTRODELESS GAS LASERS

Clifton S. Fox, Woodbridge; Jay A. Fox, Alexandria, and Dallas N. Barr, Woodbridge, all of Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 22, 1981, Ser. No. 227,447

Int. Cl.³ H01S 3/03

U.S. Cl. 372—61 **7 Claims**



1. A dielectric coupling for excitation of transversely excited electrodeless gas laser to provide a highly efficient gas laser, said coupling comprising:

an elongated body of dielectric material enclosing a laser gas medium confined in a circular cylindrical volume that forms an optical mode volume through the length of said elongated body of dielectric material, said elongated body of dielectric material having outward extensions along its length in diametrically opposite directions; and

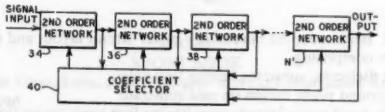
two concave metal conductors made of a conducting material fitted against opposite sides of said elongated body of dielectric material along the length thereof and in quadrature with said outward extensions, said two concave metal conductors connected to a high voltage at a switchable high voltage terminal whereby high voltage applied to said two concave metal conductors causes space charge build up at the edges of the dielectric material in contact with said laser gas medium to provide excitation of said laser gas medium, said extensions extending a distance outward of said body and along said body sufficient to prevent stray electrical current leakage between said concave metal conductors.

4,359,778

CHANNEL EQUALIZER AND METHOD FOR CANCELLING GHOSTS

Ronald B. Lee, Skokie, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Filed Feb. 5, 1981, Ser. No. 231,713
Int. Cl.³ H03H *21/00*; H04B *3/14*
U.S. Cl. 375—13 **13 Claims**



12. In a system which receives, via a communication channel, a training signal, data, and ghosts of the training signal and the data, and wherein the training signal and its ghosts are representable as a finite length sequence of N terms representative of the maximum and minimum phase components of the communication channel and the training signal, a method of removing the ghosts from the data, comprising:

processing the training signal and its ghosts by performing a plurality of first successive filtering steps each of which reduces the number of terms of the finite length sequence by two; and

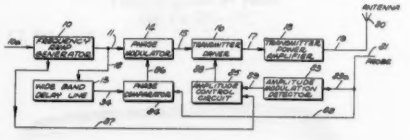
processing the data and its ghosts by performing a plurality of successive second filtering steps each of which has a characteristic substantially identical to a corresponding one of the first filtering steps.

4,359,779

FM TRANSMITTER WITH FREQUENCY RAMP PHASE AND AMPLITUDE CORRECTION MEANS

Arnold M. Levine, Chatsworth, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Dec. 8, 1980, Ser. No. 214,092
Int. Cl.³ H04B *1/02*
U.S. Cl. 455—110 **6 Claims**



1. A frequency modulated, radio-frequency transmitting system comprising:

a cyclically operating frequency ramp generator and a radio-frequency power amplifier having an input responsive to said frequency ramp and an output providing a power amplified replica of said frequency ramp;

first means for providing a sample signal by diverting a fraction of the output signal of said power amplifier as a sample signal;

second means including a gain controllable driver stage between said frequency ramp generator and said power amplifier;

third means including an amplitude modulation detector responsive to said sample signal for generating and applying a gain control signal to said driver stage in a manner tending to cancel any amplitude modulation from said power amplifier output;

fourth means including a phase modulator in series between said frequency ramp generator and said power amplifier;

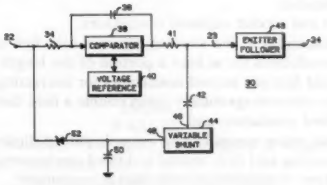
fifth means including a delay device, and a phase comparator, said phase comparator being responsive to said sample signal and to the output of said delay device, said delay device being responsive at its input to said frequency ramp generator, and the output of said comparator being a phase correction signal applied to said fourth means.

4,359,780

HIGH SPEED SQUELCH CIRCUIT

Charles M. Day, Algonquin, Ill., assignor to Motorola, Inc. (Corporate Offices), Schaumburg, Ill.

Filed Aug. 6, 1980, Ser. No. 175,606
Int. Cl.³ H04B *1/10*
U.S. Cl. 455—222 **8 Claims**



1. A communications receiver squelch circuit operable in response to detected noise voltage comprising:

(a) filter means, adapted to receive the detected noise voltage and being responsive to high frequency noise, for filtering the detected noise voltage to develop a filtered noise voltage;

(b) comparator means, having an input and an output for comparing the filtered noise voltage to a reference voltage and for generating a control signal at the output when said filtered noise voltage exceeds said reference voltage;

(c) variable shunt means, having an input and an output coupled to the comparator means output, for generating a voltage inversely dependent upon a signal coupled to the input;

(d) capacitor means, for coupling the output of the variable shunt means to the output of the comparator means;

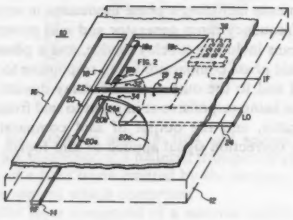
(e) integrator means, coupled to the comparator means input, for integrating filtered noise voltage and coupling the integrated noise voltage to the shunt means input.

4,359,781

BALUN COUPLED MICROWAVE FREQUENCY CONVERTER WITH SINGLE PAIR OF DIODES

Ben R. Hallford, Wylie, Tex., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Dec. 15, 1980, Ser. No. 216,718
Int. Cl.[3] H04B 1/26
U.S. Cl. 455—327 20 Claims



1. A balun coupled frequency converter comprising, in combination:

first and second coplanar conductors;

a transmission line situated adjacent said first and second conductors for at least a portion of the length of each of said first and second conductors for interacting therewith to electromagnetically balun couple a field therebetween;

a third conductor; and

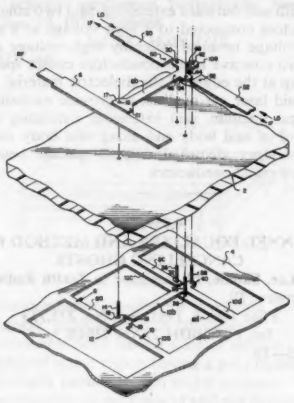
diode mixer means having a simple pair of diodes interconnecting said first, second and third conductors for heterodyne modulation product signal generation.

4,359,782

MICROWAVE MIXER WITH LINKING JUXTAPOSED BALUN PORT

Ben R. Hallford, Wylie, Tex., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed May 19, 1981, Ser. No. 265,127
Int. Cl.[3] H04B 1/26; H03H 7/42
U.S. Cl. 455—327 24 Claims



1. Balun coupled microwave mixer circuit layout and structure comprising:

a dielectric substrate having two sides;

ground plane means on said substrate;

first and second conductors having first coplanar sections on one side of said substrate extending from said ground plane means towards each other to a separation gap therebetween, and having second extension sections extending in spaced parallel relation, said second extension sections juxtaposed on opposite sides of said substrate, one of said extension sections being connected to the first section of its respective said conductor by a link through said substrate;

a transmission line on the other side of said substrate and juxtaposed said first sections of said first and second conductors for interacting therewith to balun couple a field balanced between said first and second conductors across said gap between said coplanar first sections and across the substrate between said juxtaposed extension sections;

third and fourth spaced conductors on said substrate; and

a diode mixer interconnecting all of said conductors for heterodyne modulation product signal generation.

DESIGNS

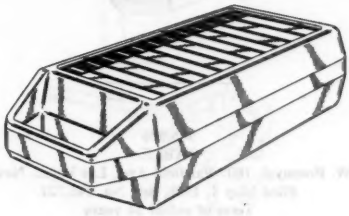
NOVEMBER 16, 1982

266,880
JACKET
Antti J. Luhtala, Kurikka, Finland, assignor to Almarin Canada Ltd., Walkerville, Canada
Filed Aug. 27, 1979, Ser. No. 70,407
Claims priority, application Canada, May 8, 1979, 327149
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—185

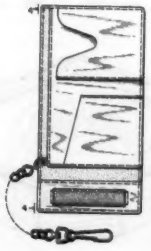
266,881
SPORT SHOE
Yoshio Ueno, Kobe, Japan, assignor to Asics Corporation, Kobe, Japan
Division of Ser. No. 895,286, Apr. 10, 1978. This application Jul. 21, 1980, Ser. No. 170,880
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—309

266,882
SPORT SHOE SOLE UNIT
Yoshio Ueno, Kobe, Japan, assignor to Asics Corporation, Kobe, Japan
Division of Ser. No. 895,286, Apr. 10, 1978. This application Jul. 21, 1980, Ser. No. 170,938
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—320

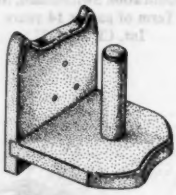
266,883
PORTABLE BOX FOR STORING TAPE CASSETTE CONTAINERS
Peter Ackeret, In der Schübelwis 4, CH 8700 Küsnacht, Switzerland
Filed Nov. 30, 1979, Ser. No. 98,794
Claims priority, application Switzerland, May 30, 1979, 68860
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—35



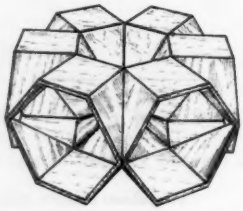
266,884
WALLET
William A. Bauman, West Bend, Wis., assignor to Enger-Kress Company, West Bend, Wis.
Filed Jan. 25, 1980, Ser. No. 115,461
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—56



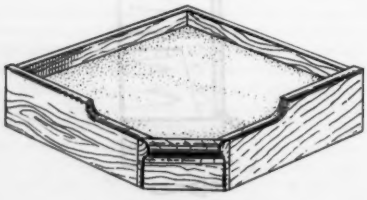
266,885
PAPER ROLL HOLDER
Stan Youngman, P.O. Box 644, Banff, Alberta, T0L 0C0, Canada
Filed Mar. 5, 1981, Ser. No. 240,980
Claims priority, application Canada, Sep. 17, 1980, 1709803
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D6—97



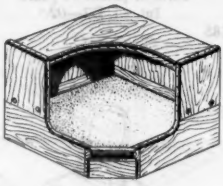
266,886
TABLE
John W. Rozsnyai, 1807 Fairfield Ave., Las Vegas, Nev. 89102
Filed May 1, 1980, Ser. No. 145,721
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—146



266,887
TABLE OR SIMILAR ARTICLE
Nicholas A. Ungaro, Louisville, Ky., assignor to Schweiger Industries, Inc., Jefferson, Wis.
Division of Ser. No. 72,765, Sep. 5, 1979. This application Mar. 19, 1981, Ser. No. 245,675
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—177

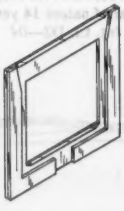


266,888
TABLE OR SIMILAR ARTICLE
Nicholas A. Ungaro, Louisville, Ky., assignor to Schweiger Industries, Inc., Jefferson, Wis.
Division of Ser. No. D. 72,765, Sep. 5, 1979. This application Mar. 19, 1981, Ser. No. 245,678
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—179



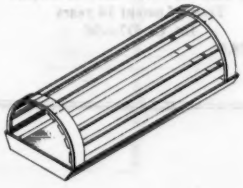
266,889
PEDESTAL FRAME
Jean Frechtman, New York, N.Y., assignor to Jeanmarie Gallery, Inc., New York, N.Y.
Filed Nov. 28, 1980, Ser. No. 211,044
Term of patent 7 years
Int. Cl. D6—*07*
U.S. Cl. D6—232

266,890
PICTURE FRAME
John G. Pfanstiehl, Rte. 87, Andover, Conn. 06232
Filed Feb. 19, 1980, Ser. No. 121,992
Term of patent 14 years
Int. Cl. D6—*07*
U.S. Cl. D6—242

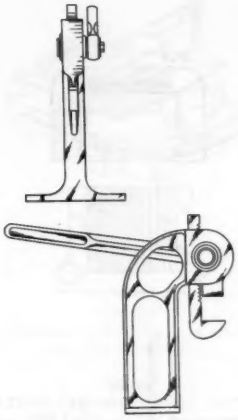


266,891
TUREEN
Walter Everhan, Klettenberg, Fed. Rep. of Germany, assignor to American Commercial Incorporated, Gardena, Calif.
Filed Aug. 12, 1980, Ser. No. 177,415
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—18

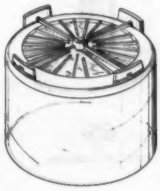
266,892
BACON COOKER
Margie M. Ford, 1881 6th Ave., Olivehurst, Calif. 95961
Filed Jul. 9, 1979, Ser. No. 56,134
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—359



266,893
NUT CRACKER
Virgil L. Earnest, R.R. #1, Greenville, Ill. 62246
Filed Oct. 14, 1980, Ser. No. 196,445
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D7—98



266,894
BEVERAGE FILTER HOLDER
Ian J. Bersten, 457 Penshurst St., East Roseville, 2069, New South Wales, Australia
Filed Nov. 20, 1978, Ser. No. 961,899
Claims priority, application Australia, May 19, 1978, 74807
Term of patent 14 years
Int. Cl. D07—*04*
U.S. Cl. D7—400



266,895

HOLDER FOR A STOCKPOT HANDLE

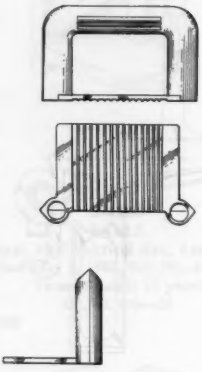
David L. Hellinger; Gordon D. Bell, both of Fort Wayne; Gregory N. Brown, Lafayette; Robert J. Kennedy, Jr., and Kendall S. Smith, II, both of West Lafayette, all of Ind., assignors to Lincoln Manufacturing Co., Inc., Fort Wayne, Ind.

Filed Oct. 22, 1980, Ser. No. 199,576

Term of patent 14 years

Int. Cl. D07—*02*

U.S. Cl. D7—394



266,896

HOLDER FOR A UTENSIL LID HANDLE

David L. Hellinger; Gordon D. Bell, both of Fort Wayne; Gregory N. Brown, Lafayette; Robert J. Kennedy, Jr., and Kendall S. Smith, II, both of West Lafayette, all of Ind., assignors to Lincoln Manufacturing Co., Inc., Fort Wayne, Ind.

Filed Oct. 22, 1980, Ser. No. 199,577

Term of patent 14 years

Int. Cl. D07—*02*

U.S. Cl. D7—393

266,897

COMBINED FRUIT AND VEGETABLE CUTTER

Robert G. Reid, Boston, England, assignor to Willows Reed Products Limited, Skegness, England

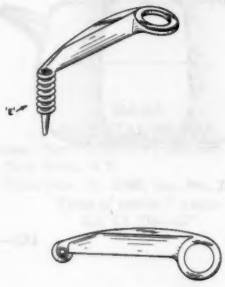
Filed Sep. 17, 1980, Ser. No. 188,009

Claims priority, application United Kingdom, Apr. 24, 1980, 994620

Term of patent 14 years

Int. Cl. D7—*04*

U.S. Cl. D7—147



266,898

DEVICE FOR LOADING LOGS

Lucien E. Benoit, R.F.D. #1, Ridge Hill Rd., and Rosario Brosseau, R.F.D. #1, both of Woonsocket, R.I. 02895

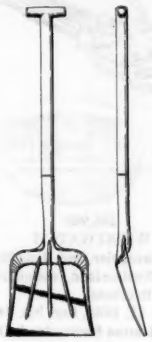
Filed Jun. 12, 1980, Ser. No. 157,031

Term of patent 14 years

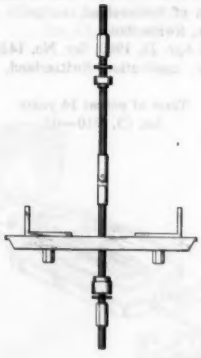
Int. Cl. D7—*08*

U.S. Cl. D23—138.5

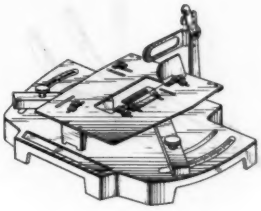
266,899
SHOVEL
David Moore, Sheffield, and Harry E. Wilson, Leeds, both of England, assignors to Harold Moore (Plastics) Holdings Limited, Great Britain
Filed May 16, 1980, Ser. No. 150,903
Claims priority, application United Kingdom, Nov. 17, 1979, 992430
Term of patent 14 years
Int. Cl. D8—*01*
U.S. Cl. D8—10



266,900
COIL SPRING COMPRESSING TOOL
Ronald J. Agrimonti, 1915 18th St., Sacramento, Calif. 95814
Filed Apr. 21, 1980, Ser. No. 142,244
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—14



266,901
PORTABLE CIRCULAR POWER SAW SUPPORT
Irwin J. Ferdinand, Glencoe; Richard Sylvan, Glenview, and Herbert Baisch, Palatine, all of Ill., assignors to Hirsh Company, Skokie, Ill.
Filed Apr. 29, 1980, Ser. No. 141,074
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—71

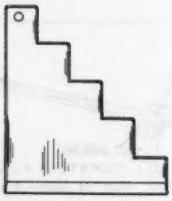


266,902
COMBINATION AXE AND METAL CUTTER DEVICE
Phil K. Tarran, 2308 California St., Oceanside, Calif. 92054
Filed Sep. 18, 1980, Ser. No. 188,376
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—76

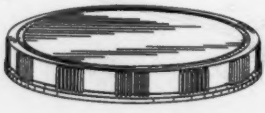
266,903
COMBINATION AXE AND BASHER-ADZ DEVICE
Phil K. Tarran, 2308 California St., Oceanside, Calif. 92054
Filed Sep. 18, 1980, Ser. No. 188,378
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—76

266,904
WIRE GATE LATCH
Karl B. Freding, P.O. Box 488, Princeton, British Columbia, Canada (VOX 1WO)
Filed May 28, 1980, Ser. No. 153,857
Claims priority, application Canada, Feb. 14, 1980, 14-02-80-5
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—338

266,905
GAS PUMP HANDLE HOLDER AND ICE SCRAPER
Donald D. Wallis, 242 Basswood, Spring, Tex. 77373
Filed Aug. 14, 1980, Ser. No. 178,377
Term of patent 14 years
Int. Cl.[3] D8—*08*; D7—*05*
U.S. Cl. D8—349

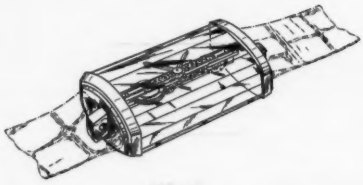


266,906
CONTAINER LID
Richard Guerette, Senneville, Canada, assignor to Arnoldware-Rogers (Canada) LTEE, Rawdon, Canada
Filed Mar. 11, 1980, Ser. No. 129,222
Claims priority, application Canada, Oct. 4, 1979, 04-10-79-12
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—453

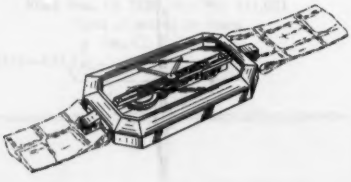


266,907
GUITAR-SHAPED CLOCK
Sven Salen, Partille, Sweden, assignor to Goteborgs Tra och Metall, Angered, Sweden
Filed Oct. 20, 1980, Ser. No. 199,053
Claims priority, application Sweden, Apr. 21, 1980, 80-812
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—6

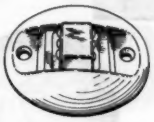
266,908
WRISTWATCH
Jean-Claude Schwab, Savagnier, and Rene Bannwart, La Chaux De Fonds, both of Switzerland, assignors to Corum, Ries, Bannwart & Co., Switzerland
Filed Apr. 21, 1980, Ser. No. 141,802
Claims priority, application Switzerland, Oct. 22, 1979, 69476
Term of patent 14 years
Int. Cl. D10—*02*
U.S. Cl. D10—39



266,909
WRISTWATCH
Jean-Claude Schwab, Savagnier, and Rene Bannwart, La Chaux De Fonds, both of Switzerland, assignors to Corum, Ries, Bannwart & Co., Switzerland
Filed Apr. 21, 1980, Ser. No. 141,804
Claims priority, application Switzerland, Oct. 22, 1979, 69476/79
Term of patent 14 years
Int. Cl. D10—*02*
U.S. Cl. D10—39



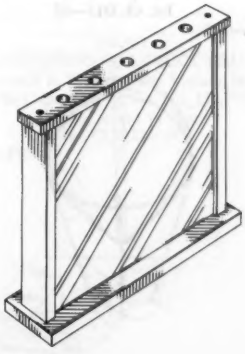
266,910
ROAD STUD
Alan Brickwood, Leamington Spa, England, assignor to Molehurst Limited, Leicester, England
Filed May 21, 1980, Ser. No. 152,129
Claims priority, application United Kingdom, Nov. 23, 1979, 79/992515
Term of patent 14 years
Int. Cl. D10—*06*
U.S. Cl. D10—113



266,911
RING
William F. Young, 4226 Grand Prairie, Kalamazoo, Mich. 49007
Filed Nov. 7, 1979, Ser. No. 92,122
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—30

266,912
PENDANT OR SIMILAR ARTICLE
Josef J. Barr, 125 Worth Ave., Palm Beach, Fla. 33480
Filed Aug. 7, 1980, Ser. No. 176,132
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—79

266,913
PLANTER
Bruce J. Hazelton, 425 E. McKellips, Space 106, Mesa, Ariz. 85203
Filed Aug. 1, 1980, Ser. No. 174,703
Term of patent 14 years
Int. Cl. D11—*02;* D19—*02;* D24—*99*
U.S. Cl. D11—147

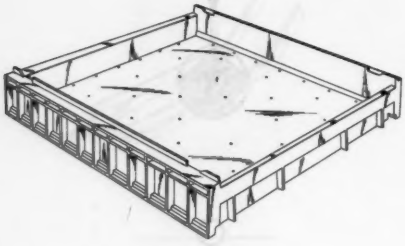


266,914

TRAY FOR GROWING PLANT SEEDLINGS

Daniel R. Miller, Cincinnati, Ohio, assignor to Nestier Corporation, Cincinnati, Ohio

Filed Sep. 19, 1980, Ser. No. 188,694
Term of patent 14 years
Int. Cl. D11—*02*; D9—*03*
U.S. Cl. D11—155



266,915

SCULPTURAL AIR BALLOON ATTACHMENT FOR A GIFT BASKET

Marlene A. Metzinger, 2780 W. Monroe Pl., Anaheim, Calif. 92801

Filed Jan. 5, 1981, Ser. No. 222,496
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—163

266,916

COVER FOR PLANT POTS OR THE LIKE

Donald A. Kaufmann, West Bloomfield, Mich., assignor to Florists' Transworld Delivery Association, Southfield, Mich.

Filed Apr. 17, 1980, Ser. No. 140,989
Term of patent 7 years
Int. Cl. D11—*02*
U.S. Cl. D11—164

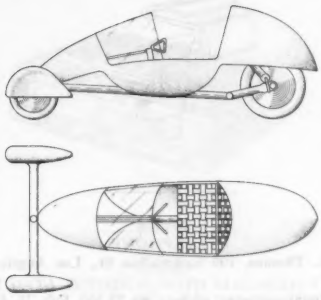
266,917

POWER DRIVEN SKI VEHICLE

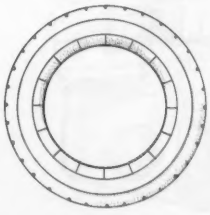
Charles Stewart, Bourbonnais, and Richard W. Condon, Frankfort, both of Ill., assignors to Roper Corporation, Kankakee, Ill.

Filed Sep. 29, 1978, Ser. No. 947,247
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D12—7

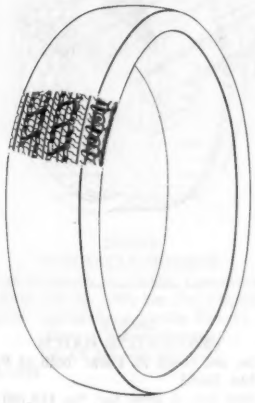
266,918
PEDAL DRIVEN VEHICLE
Fredric J. Buczak, 8318 N. Central Ave., Morton Grove, Ill. 60053
Filed Apr. 28, 1980, Ser. No. 144,181
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—112



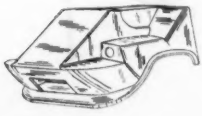
266,919
TIRE FOR A VEHICLE WHEEL
Brian S. Bennett, Barton-under-Needwood, England, assignor to Dunlop Limited, London, England
Filed Sep. 10, 1980, Ser. No. 185,960
Claims priority, application United Kingdom, Mar. 22, 1980, 994169
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—146



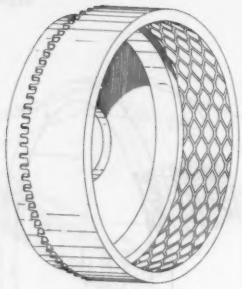
266,920
PNEUMATIC TIRE TREAD AND BUTTRESS
Gerassimos C. Candiliotis, Grosse Pointe Farms, Mich., assignor to Uniroyal, Inc., New York, N.Y.
Filed May 1, 1980, Ser. No. 145,513
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—147



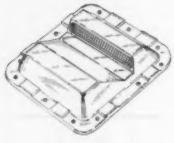
266,921
HOOD COVERING FOR TRUCK TRACTORS
Alan C. Parry, 1439 E. Madison, Des Moines, Iowa 50316
Filed Apr. 3, 1980, Ser. No. 136,797
Term of patent 14 years
Int. Cl. D12—*09*
U.S. Cl. D12—173



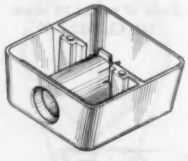
266,922
BRAKE DRUM
William G. Reynolds, deceased, late of Bal Harbour, Fla., assignor to Reynolds Metals Company, Richmond, Va.
Filed May 1, 1980, Ser. No. 145,673
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—180



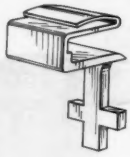
266,923
VENTILATING HATCH
Edgar L. Parks, and Greig H. Parks, both of P.O. Box 527, Lexington, Md. 20653
Filed Feb. 6, 1980, Ser. No. 119,160
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D12—317



266,924
COMBINED TERMINAL SOCKET AND CASING THEREFOR
Bo Strandfelt, Rosendalsvagen 9, S 194 00 Uplands Vasby, Sweden
Filed May 7, 1980, Ser. No. 147,609
Claims priority, application Sweden, Nov. 7, 1979, 79-2461
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—24



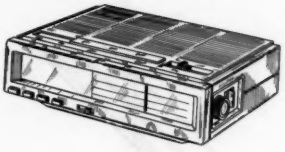
266,925
ELECTRICAL CONNECTOR
Dale E. Cooper; Ronald E. Grillot; Gary K. Quick, and Kevin R. Smith, all of Johnson County, Kans., assignors to King Radio Corporation, Olathe, Kans.
Filed Aug. 25, 1980, Ser. No. 180,984
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—24



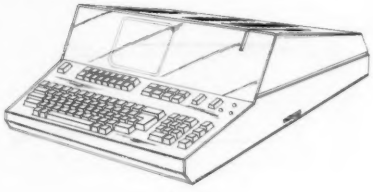
266,926
TELEPHONE
Wesley L. Thomas, 109 S. Catalina St., Los Angeles, Calif. 90004
Continuation-in-part of Ser. No. 13,260, Feb. 21, 1979, abandoned. This application Jan. 26, 1981, Ser. No. 228,115
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—53

266,927
COIN TELEPHONE SET ENCLOSURE
Herbert C. Illium, Jr., Asbury Park; Kenneth L. Korby, Red Bank, both of N.J., and John N. McGarvey, Drexel Hill, Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Dec. 22, 1980, Ser. No. 219,356
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—55

266,928
CLOCK RADIO RECEIVER
Jan Wassenaar, Valkenswaard, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Jul. 25, 1980, Ser. No. 172,317
Claims priority, application United Kingdom, Feb. 1, 1980, 993426
Term of patent 14 years
Int. Cl. D14—*03;* D10—*01*
U.S. Cl. D14—73

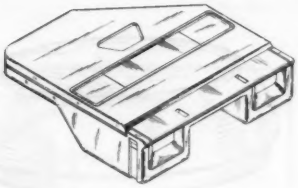


266,929
CRT DATA TERMINAL WITH MAGNETIC CARD READER
John B. Coppola, Trumbull, Conn., and James R. Ferrara, Pound Ridge, N.Y., assignors to Bunker Ramo Corporation, Oak Brook, Ill.
Filed Aug. 28, 1979, Ser. No. 70,455
Term of patent 7 years
Int. Cl. D14—*02*
U.S. Cl. D14—106



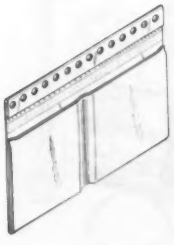
266,930
COMBINED CAMERA AND ELECTRONIC FLASH UNIT
Herbert Schultes, Fürstenfeldbruck, and Karl-Heinz Rubner, Munich, both of Fed. Rep. of Germany, assignors to Agfa - Gevaert AG, Leverkusen, Fed. Rep. of Germany
Filed Jul. 25, 1980, Ser. No. 172,429
Term of patent 14 years
Int. Cl. D16—*01*
U.S. Cl. D16—6

266,931
COMPACT VIEWER
Paul D. Miller; Richard Penney, both of New York, N.Y., and Richard M. Joffe, North Bergen, N.J., assignors to View-Master International Group, Portland, Oreg.
Filed Feb. 5, 1979, Ser. No. 9,190
Term of patent 14 years
Int. Cl. D16—*02*
U.S. Cl. D16—12



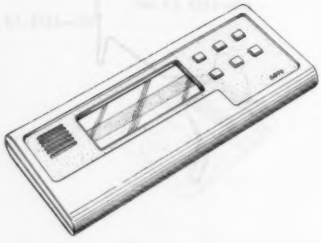
266,932
SPECTACLE HOLDER
Magna O. Liset, Proposch St., Oakey, Queensland, Australia
Filed Jul. 28, 1980, Ser. No. 173,063
Claims priority, application Australia, Feb. 11, 1980, 80213
Term of patent 14 years
Int. Cl. D8—*08;* D16—*99*
U.S. Cl. D16—129

266,933
ENVELOPE BLANK OR THE LIKE
Lewis Teffeau, Doylestown, Pa., assignor to American Standard Inc., New York, N.Y.
Filed Aug. 9, 1979, Ser. No. 65,242
Term of patent 14 years
Int. Cl. D19—*01*
U.S. Cl. D19—3



266,934
HOLDER FOR RETAINING SMALL METAL OBJECTS MAGNETICALLY
Feather W. King, San Francisco, Calif., assignor to Blue Feather Products, Inc., Ashland, Oreg.
Filed Mar. 24, 1980, Ser. No. 133,434
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—75

266,935
HOUSING FOR ELECTRONIC GAME
Robert M. Del Principe, Hawthorne, and Edward Mayer, Los Angeles, both of Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Jun. 6, 1980, Ser. No. 156,988
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—13



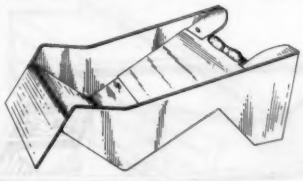
266,936
MIRROR TOY
Gene Brunson, 631 White St., and Paul Douglas, 934 Carrie St., both of Walla Walla, Wash. 99362
Filed Jul. 15, 1980, Ser. No. 169,130
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—59

266,937
TOY WATER CANAL SECTIONS
Britt I. Dahlgren, Utsiktsvägen 10, S-436 00, Askim, Sweden
Continuation-in-part of Ser. No. 899,886, Apr. 25, 1978, abandoned. This application Nov. 18, 1980, Ser. No. 207,894
Claims priority, application Sweden, Oct. 25, 1977, 77-2160
Term of patent 7 years
Int. Cl. D21—*01*
U.S. Cl. D21—59

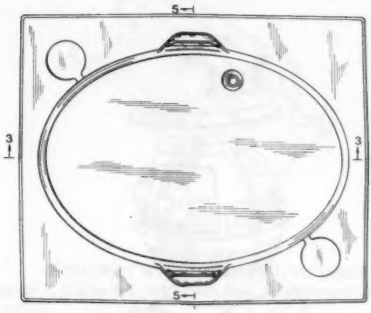
266,938
ROLLING TOY ANIMAL FIGURE
Catherine M. Barton, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Jan. 22, 1980, Ser. No. 114,274
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—148

266,939
COMBINED GOLF CLUB AND FISHING ROD
Howard F. Brammell, 108 N. Jefferson, Abilene, Kans. 67410
Filed Nov. 4, 1980, Ser. No. 204,073
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—215

266,940
INFANT'S BATHTUB SEAT
Gertrude P. Rosian, 2295 Niles Cortland Rd. SE., Warren, Ohio 44484
Filed Aug. 25, 1980, Ser. No. 180,952
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—52

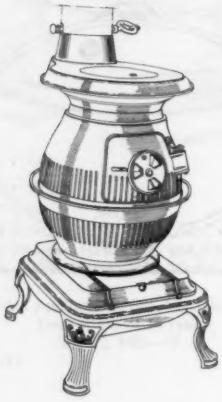


266,941
BATHTUB OR SIMILAR ARTICLE
Henry M. Stairs, Jr., Neshanic, N.J., assignor to American Standard Inc., New York, N.Y.
Filed Jul. 17, 1980, Ser. No. 169,568
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—55



266,942
COAL STOVE
Cyril L. Rennels, Telford, Pa., assignor to Quaker Stove Co., Inc., Trumbaursville, Pa.
Filed May 26, 1981, Ser. No. 266,993
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—97

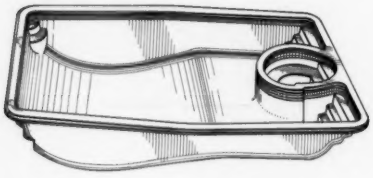
266,943
SPACE HEATER
Terence F. Porter, Auckland, New Zealand, assignor to Mason & Porter Limited, Auckland, New Zealand
Filed Feb. 7, 1979, Ser. No. 10,153
Claims priority, application New Zealand, Oct. 26, 1978, 15734
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—105



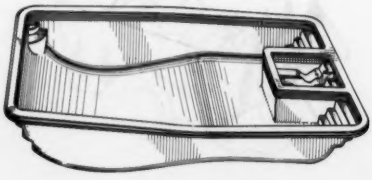
266,944
DOOR ASSEMBLY FOR WOOD STOVES
John Fisher, Rte. 1, Box 63, Conifer, Colo. 80433
Filed Feb. 4, 1980, Ser. No. 118,498
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—128

266,945
SOUNDFOCUSER
S. Robert Greenberg, 327 19th St., Santa Monica, Calif. 90402
Filed Dec. 27, 1979, Ser. No. 107,576
Term of patent 14 years
Int. Cl. D24—*99*
U.S. Cl. D24—35

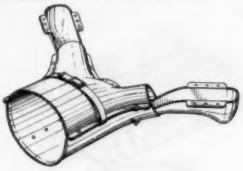
266,946
SWIMMING POOL AND SPA COMBINATION
Lino Z. Topete, 1845 E. San Antonio St., San Jose, Calif. 95116
Filed Jun. 30, 1980, Ser. No. 164,700
Term of patent 14 years
Int. Cl. D24—*01;* D23—*02;* D25—*99*
U.S. Cl. D24—38



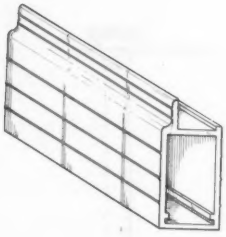
266,947
SWIMMING POOL AND SPA COMBINATION
Lino Z. Topete, 1845 E. San Antonio St., San Jose, Calif. 95116
Filed Jun. 30, 1980, Ser. No. 164,912
Term of patent 14 years
Int. Cl. D24—*01;* D23—*02;* D25—*99*
U.S. Cl. D24—38



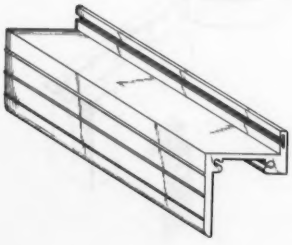
266,948
ABDUCTION SPLINT
Johs. Kvittingen, Moholtlia 30, N-7000 Trondheim, Norway
Filed May 28, 1980, Ser. No. 153,980
Claims priority, application Norway, Nov. 29, 1979, 60638
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D24—64



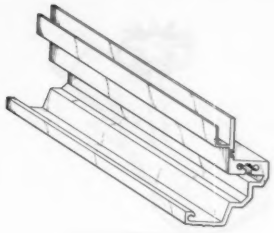
266,949
DOOR FRAME MEMBER
Marvin L. Goldhaber, 5102 Rock Run, West Bloomfield, Mich. 48033
Filed Nov. 6, 1980, Ser. No. 204,598
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—74



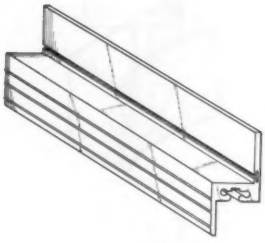
266,950
WINDOW FRAME MEMBER
Marvin L. Goldhaber, 5102 Rock Run, West Bloomfield, Mich. 48033
Filed Nov. 6, 1980, Ser. No. 204,600
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—74



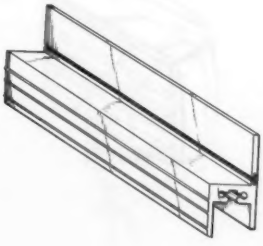
266,951
DOOR EDGE MEMBER
Marvin L. Goldhaber, 5102 Rock Run, West Bloomfield, Mich. 48033
Filed Nov. 6, 1980, Ser. No. 204,601
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—74



266,952
Z-SHAPED WINDOW FRAME MEMBER
Marvin L. Goldhaber, 5102 Rock Run, West Bloomfield, Mich. 48033
Filed Nov. 6, 1980, Ser. No. 204,602
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—74

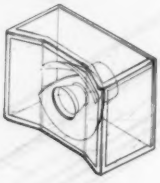


266,953
H-SHAPED WINDOW FRAME MEMBER
Marvin L. Goldhaber, 5102 Rock Run, West Bloomfield, Mich. 48033
Filed Nov. 6, 1980, Ser. No. 204,603
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—74

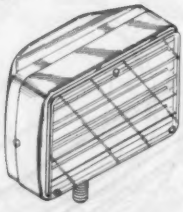


266,954
ILLUMINATED DISPLAY
Miroslav Gordan, 2958 S. Laramie Ave., Cicero, Ill. 60650
Filed Jan. 3, 1980, Ser. No. 109,324
Term of patent 14 years
Int. Cl. D26—*04*; D11—*99*
U.S. Cl. D26—24

266,955
SIGNAL LIGHT FOR A VEHICLE
Knut O. Sassmannshausen, Rothenbach St., D 6580 Idar-Oberstein, Fed. Rep. of Germany
Filed Sep. 25, 1979, Ser. No. 78,816
Claims priority, application Fed. Rep. of Germany, Mar. 26, 1979, 1486
Term of patent 14 years
Int. Cl. D26—*06*
U.S. Cl. D26—28

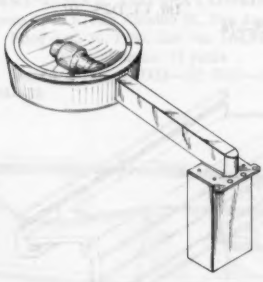


266,956
VEHICLE LAMP
Orville H. Kritz, Yorba Linda, and Frederick L. A. de Ronde, Covina, both of Calif., assignors to Per-Lux, Inc., Covina, Calif.
Filed Dec. 3, 1979, Ser. No. 99,940
Term of patent 14 years
Int. Cl. D26—*06*
U.S. Cl. D26—28

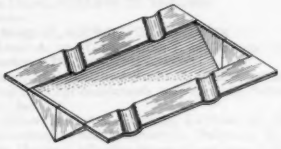


266,957
LANTERN
Jackey K. W. Lee, Kowloon, Hong Kong, assignor to Lomack Industrial Co. Limited, Hong Kong
Filed Apr. 21, 1980, Ser. No. 141,985
Claims priority, application United Kingdom, Nov. 20, 1979, 992458
Term of patent 14 years
Int. Cl. D26—*2*
U.S. Cl. D26—48

266,958
PORTABLE INDIRECT LIGHTING FIXTURE FOR OFFICE PARTITIONS OR THE LIKE
Paul D. Gernhardt, Northport, N.Y., assignor to Slater Electric Inc., Glen Cove, N.Y.
Filed Jul. 2, 1980, Ser. No. 165,330
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D26—92



266,959
DISPOSABLE ASHTRAY
Francis K. Harvey, 413 Trippe Ave., Easton, Md. 21601; Larrabee Franks, 515 Druid Hill Ave., Salisbury, Md. 21801, and David L. Ingraham, E. Walnut St., Delmar, Del. 19940
Filed Oct. 21, 1980, Ser. No. 199,369
Term of patent 14 years
Int. Cl. D27—*03*
U.S. Cl. D27—08

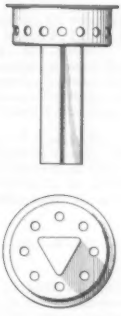


266,960
RAZOR HANDLE
Michael J. Gray, Duxbury, and Robert A. Trotta, Winthrop, both of Mass., assignors to The Gillette Company, Boston, Mass.
Filed Aug. 7, 1980, Ser. No. 176,000
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—48

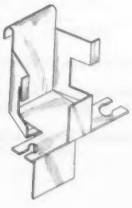
266,961
PERFUME DISPENSER
Pierre Balleraud, Damarie, France, assignor to Paco Rabanne Parfums, Paris, France
Filed Feb. 19, 1981, Ser. No. 235,911
Claims priority, application Hague, Oct. 6, 1980, DM/000387
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—91.1

266,962
FABRIC CLEANING HEAD
William R. Hachtmann, 5072 Walnut Park Dr., and Arlen M. Knight, 1141 N. Patterson Ave., both of Santa Barbara, Calif. 93111
Filed Nov. 4, 1980, Ser. No. 203,993
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D32—33

266,963
GARBAGE DISPOSAL TOOL
David L. Sherman, 116 Kings Crown, San Antonio, Tex. 78233
Filed Aug. 8, 1980, Ser. No. 176,395
Term of patent 14 years
Int. Cl. D8—*05*; D7—*99*
U.S. Cl. D32—35



266,964
COMBINED LADDER BUCKET AND BRUSH HOLDER
Abdullah K. Rasheed, 5300 Partridge St., Durham, N.C. 27704
Filed Jul. 28, 1980, Ser. No. 172,980
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D32—54



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 16TH DAY OF NOVEMBER, 1982

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A & W Products Company, Inc.: *See*—
Augustin, Georg, 4,358,894, Cl. 33-27.00B.

AB Volvo: *See*—
Persson, Bengt G., 4,359,023, Cl. 123-195.00C.

Abbagnaro, Louis A.; and Gust, Arthur J., to CBS Inc. Vertical tracking angle meter. 4,359,768, Cl. 369-55.000.

Abdurakhmanov, Mirkhasil; and Karimov, Rakhmatzhan K. Method for preparing carbonyl compounds. 4,359,587, Cl. 568-402.000.

Abe, Yoshiaki: *See*—
Tada, Yoshiharu; and Abe, Yoshiaki, 4,359,643, Cl. 290-38.00R.

Acharya, Vikramkumar; and Lakshmanan, Pallavoor R., to Gulf Oil Corporation. Hot melt adhesive compositions containing an aliphatic hydrocarbon resin. 4,359,552, Cl. 525-193.000.

Acket, Gerard A.; de Waard, Peter J.; Khoe, Giok D.; Wirtz, Gijsbrecht C.; and Rozzi, Tullio E., to U.S. Philips Corporation. Device for generating or amplifying coherent electromagnetic radiation, and method of manufacturing the device. 4,359,776, Cl. 372-46.000.

Acme General Corporation: *See*—
Brydolf, Robert, 4,359,080, Cl. 160-199.000.

Adsley, Ian: *See*—
Wykes, John S.; Surzyn, Piotr M.; Croke, Gerard M.; and Adsley, Ian, 4,359,639, Cl. 250-359.100.

Advance Tapes (U.K.) Limited: *See*—
Potaczek, Jan J., 4,359,047, Cl. 128-156.000.

Advanced Micro Devices, Inc.: *See*—
Apfel, Russell J., 4,359,609, Cl. 179-16.00F.

Aeby, Ian: *See*—
Watson, Bobby L.; and Aeby, Ian, 4,359,608, Cl. 179-15.55R.

Aero-Geophysical, Inc.: *See*—
Geiger, Allen R., 4,359,640, Cl. 250-372.000.

Aftergut, Siegfried: *See*—
Cole, Herbert S., Jr.; and Aftergut, Siegfried, 4,359,398, Cl. 252-299.100.

Agarwal, Pawan K.; and Makowski, Henry S., to Exxon Research and Engineering Co. Pressure sensitive adhesive compositions. 4,359,547, Cl. 524-504.000.

Agence Nationale de Valorisation de la Recherche: *See*—
Armand, Michel B.; and Jeanne, Francis J. P., 4,359,327, Cl. 55-16.000.

Aiba, Yasuaki, to Honda Giken Kogyo Kabushiki Kaisha. Method for mounting an exhaust system in a motorcycle. 4,359,126, Cl. 180-219.000.

Aida, Kouichirou; Suzuki, Haruo; Kuwabara, Mitsuru; and Imaizumi, Yukio, to Sony Corporation. Carton handle. 4,359,183, Cl. 229-52.00A.

Aihara, Mamoru; Takahashi, Yutaka; Nakajima, Yoshio; and Matsuura, Tsuyoshi, to Olympus Optical Company Ltd. Photographing apparatus. 4,359,273, Cl. 354-23.00D.

Air Products and Chemicals, Inc.: *See*—
Bauman, Bernard D., 4,359,560, Cl. 526-74.000.
Levis, Robert W., 4,359,351, Cl. 148-16.700.

Aizawa, Hiroshi: *See*—
Shimizu, Masami; Omi, Junji; Watanabe, Kunio; Uchidoi, Masanori; and Aizawa, Hiroshi, 4,359,277, Cl. 354-219.000.

Akao, Mutsuo; and Kashiwagi, Kenzo, to Fuji Photo Film Co., Ltd. Packaging material for photosensitive materials. 4,359,499, Cl. 428-201.000.

Akermans Verstad AB: *See*—
Tordenmalm, L. Osten, 4,358,989, Cl. 91-361.000.

Aktiebolaget Bofors: *See*—
Claussen, Lennart, 4,359,097, Cl. 169-61.000.
Winblad, Nils, 4,358,984, Cl. 89-36.00H.

Akzo N.V.: *See*—
Gerlach, Klaus; and Wick, Gerhard, 4,359,359, Cl. 156-294.000.
Kock, Manfred, 4,359,480, Cl. 426-430.000.

Albany International Corp.: *See*—
DiTullio, Venanzio, 4,359,501, Cl. 428-245.000.
Hahn, Edward R., 4,359,069, Cl. 139-425.00A.
Parker, Roy B.; and Levesque, Daniel R., 4,359,132, Cl. 181-169.000.

Albee, William H. Off road vehicles. 4,359,122, Cl. 180-74.000.

Alfa-Laval AB: *See*—
Johansson, Borje, 4,359,087, Cl. 165-167.000.

Allen-Bradley Company: *See*—
Hart, John S., 4,359,672, Cl. 318-16.000.

Allen, Leon A., to Harper-Love Adhesives Corporation. Starch based adhesives and method therefor. 4,359,341, Cl. 106-213.000.

Allibert Exploitation, Societe Anonyme: *See*—
Triadu, Alain, 4,359,168, Cl. 220-73.000.

Allied Corporation: *See*—
Grey, Roger A.; and Pez, Guido P., 4,359,404, Cl. 252-430.000.
Hammond, Willis B.; Bigeleisen, Jacob; and Tuccio, Sam A., 4,359,368, Cl. 204-158.00R.
Maeland, Arnulf J., 4,359,396, Cl. 252-188.250.

Allis-Chalmers Corporation: *See*—
Haupt, Robert C.; and Kaiser, George E., 4,359,123, Cl. 180-159.000.
Pustejovsky, Dan, 4,358,921, Cl. 56-34.000.

Allport, John J., to Zikonix Corporation. Method for continuously determining the composition of butter and similar substances from a manufacturing process. 4,359,638, Cl. 378-50.000.

Almasi, Istvan; Kassai, Ferenc; and Nyeste, Laszlo, to Banyaszati Aknamelyito Vallalat. Automatically startable oxygen rescue device. 4,359,048, Cl. 128-205.120.

Alpha Process Controls (West Yorkshire) Ltd.: *See*—
Hunt, Charles R., 4,359,066, Cl. 137-614.060.

Alps Electric Co., Ltd.: *See*—
Aoki, Kazuharu, 4,359,701, Cl. 334-15.000.
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Tanabe, Hirokuni; and Onodera, Masahiro, 4,359,711, Cl. 338-134.000.

Altman, Murray; and Bellasalma, Gerald J., to Thermasol, Ltd. Connector assembly for whirlpool system. 4,358,862, Cl. 4-542.000.

Aluminum Company of America: *See*—
Brown, Melvin H., 4,359,530, Cl. 435-68.000.
Brown, Melvin H., 4,359,532, Cl. 435-99.000.

Alviti, Steven R., to Bel Air Tool Corp. Chain cutting machine. 4,358,976, Cl. 83-66.000.

American Can Company: *See*—
Lin, Stephen Y., 4,359,321, Cl. 8-528.000.

American Cyanamid Company: *See*—
Granzow, Albrecht H.; and Klingsberg, Erwin, 4,359,577, Cl. 544-348.000.
Grasso, Charles P., 4,359,580, Cl. 549-79.000.
Nair, Vijay G.; Joseph, Joseph P.; Lewis, Arthur J.; and Bernstein, Seymour, 4,359,458, Cl. 424-180.000.
Nair, Vijay G.; and Bernstein, Seymour, 4,359,459, Cl. 424-180.000.
Nair, Vijay G.; and Bernstein, Seymour, 4,359,460, Cl. 424-180.000.
Nair, Vijay G.; and Bernstein, Seymour, 4,359,461, Cl. 424-180.000.
Sills, Ronald A.; Katz, Daniel S.; and Singh, Balwant, 4,359,575, Cl. 544-192.000.

American District Telegraph Company: *See*—
Galvin, Aaron A.; and Harvey, Roy L., 4,359,721, Cl. 340-525.000.

American Hospital Supply Corporation: *See*—
Jackson, Barry N., 4,359,134, Cl. 181-230.000.
Pagel, Kenneth L.; Mueller, Lester A.; and Nei, Gary E., 4,358,865, Cl. 5-81.00B.

Amery, John G.: *See*—
Schneider, Dennis M.; and Amery, John G., 4,359,756, Cl. 358-27.000.

AMF Incorporated: *See*—
Bennison, Michael N., 4,359,009, Cl. 112-121.120.

Ammermann, Eberhard; Zeeh, Bernd; Hamprecht, Gerhard; and Pommer, Ernst-Heinrich, to BASF Aktiengesellschaft. 2-(N-Aryl,N-1,2,3-thiadiazolylcarbonyl)-aminobutyro-lactones, their preparation, fungicidal agents containing these compounds, and their use as fungicides. 4,359,471, Cl. 424-269.000.

AMP Incorporated: *See*—
Keller, Joseph R., 4,359,620, Cl. 219-10.730.
Lopinski, Edward J.; and Parmer, Kenneth R., 4,359,257, Cl. 339-99.00R.
Olsson, Billy E.; and Kam, Lit Y., 4,359,252, Cl. 339-17.0CF.

Ampex Corporation: *See*—
Garrison, Marvin C., 4,359,282, Cl. 356-376.000.

Amster, Micha; and Shadmi, Gideon, to Taamal Mizra. Hydraulically operated lifting apparatus and pump therefor. 4,359,205, Cl. 254-8.00B.

Amtel, Inc.: *See*—
Lyles, Christopher J., 4,359,011, Cl. 114-230.000.

Amway Corporation: *See*—
Church, David R., 4,358,860, Cl. 4-228.000.

Anderson Company of Indiana, The: *See*—
Frankus, Andrew, 4,358,869, Cl. 15-250.300.

Anderson, James W. M.: *See*—
Strate, Ronald A.; Bills, Russell V.; and Anderson, James W. M., 4,359,089, Cl. 166-79.000.

Anderson, Paul L.; and Paolella, Nicholas A., to Sandoz, Inc. 1-Phenylpyrazole derivatives as glucagon inhibitors. 4,359,474, Cl. 424-273.00P.

Anderson, Thomas E., to General Electric Company. Lamp modulating circuitry. 4,359,669, Cl. 315-208.000.

Andoh, Shizuo: *See*—
Shinoda, Tsutae; Andoh, Shizuo; Ueda, Yoichi; and Miyashita, Yoshinori, 4,359,663, Cl. 313-217.000.

Aoki, Hsashi: *See*—
Takamizawa, Minoru; Okada, Fumio; Hara, Yasuaki; Aoki, Hsashi; and Inoue, Yoshio, 4,359,369, Cl. 204-159.130.

Aoki, Kazuharu, to Alps Electric Co., Ltd. Construction of tuning circuit in tuner. 4,359,701, Cl. 334-15.000.

Aotani, Yoshimasa: *See*—
Masuda, Takao; Fujiwara, Itsuo; Aotani, Yoshimasa; and Itoh, Isamu, 4,359,524, Cl. 430-522.000.

Apfel, Russell J., to Advanced Micro Devices, Inc. Circuit with feedback for controlling the impedance thereof. 4,359,609, Cl. 179-16.00F.

Appel, James J., to Xerox Corporation. Method of assembling a gradient index lens array. 4,359,267, Cl. 350-320.000.

Arbed S.A.: *See*—
Baumert, Jean, 4,359,211, Cl. 266-99.000.

Arbuzov, Pavel M.: *See*—
Rusanov, Alexander I.; Gavrilov, Vitaly P.; Yarmashev, Jury N.; Arbuzov, Pavel M.; and Levit, Nadezhda M., 4,359,058, Cl. 130-27.00Z.

Armand, Michel B.; and Jeanne, Francis J. P., to Agence Nationale de Valorisation de la Recherche. Gas adsorption agents particularly for separating H_2 from a gaseous phase. 4,359,327, Cl. 55-16.000.

Arnold, William, to Brouwer Turf Equipment Limited. Forklift vehicle with automatic steering return. 4,359,127, Cl. 180-252.000.

Asahi-Dow Limited: *See*—
Hoki, Tsuneo; and Matsuki, Yutaka, 4,359,539, Cl. 521-79.000.

Asahi Kasei Kogyo Kabushiki Kaisha: *See*—
Suda, Yoshikazu; Nagano, Haruhisa; Miyata, Shigeyuki; and Yamori, Akio, 4,359,551, Cl. 524-271.000.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See*—
Itoh, Takayuki, 4,359,269, Cl. 350-425.000.
Nakajima, Tohru; and Kamoi, Koichi, 4,359,308, Cl. 414-719.000.
Okudsira, Sadao, 4,359,270, Cl. 350-427.000.
Tomori, Yasumasa, 4,359,276, Cl. 354-195.000.

Asahi, Tetsuma, to Silver Seiko, Ltd. Impression control mechanism for a typewriter. 4,359,287, Cl. 400-166.000.

Asano, Masaharu: *See*—
Furuhashi, Shoji; Asano, Masaharu; and Tamura, Hideyuki, 4,359,029, Cl. 123-440.000.

Ashby, C. William; and Morse, Stephen A., to Container Corporation of America. Score line folding tester. 4,358,962, Cl. 73-849.000.

Ashland Oil, Inc.: *See*—
Barnett, Kenneth W., 4,359,401, Cl. 252-416.000.
Hoggins, James T.; and Watts, Golden F., 4,359,438, Cl. 264-105.000.

Associated Engineering Italy S.p.A.: *See*—
Bruni, Ludovico, 4,359,230, Cl. 277-216.000.

Atlantic Richfield Company: *See*—
Gaul, James M.; and Nguyen, Tinh, 4,359,507, Cl. 428-425.100.
Schlademan, James A., 4,359,492, Cl. 427-222.000.

Augustin, Georg, to A & W Products Company, Inc. Compass pencil clamp. 4,358,894, Cl. 33-27.00B.

Austin, Fred M. Belt conveyor. 4,359,156, Cl. 198-841.000.

Australasian Training Aids (Pty.) Limited: *See*—
Phillips, Robert B., 4,359,659, Cl. 310-335.000.

Autoflug GmbH: *See*—
Seel, Holger, 4,358,878, Cl. 24-230.00A.

B.A.T. Cigaretten-Fabriken GmbH: *See*—
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B. F. Goodrich Company, The: *See*—
Gardner, Keith L., 4,359,427, Cl. 260-463.000.

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Babcock & Wilcox Company, The: *See*—
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Bachl, Robert: *See*—
Stein, Dieter; Bachl, Robert; and Richter, Konrad, 4,359,562, Cl. 526-129.000.

Bachman, Charles W.; and Bachman, J. Cary. Tension clamp for three or more direction string networks. 4,359,213, Cl. 269-153.000.

Bachman, J. Cary: *See*—
Bachman, Charles W.; and Bachman, J. Cary, 4,359,213, Cl. 269-153.000.

Bachman, Wesley J., to Dickey-john Corporation. Signal processing system. 4,359,734, Cl. 343-8.000.

Bachmann, William V. Internal combustion engine. 4,359,016, Cl. 123-52.00B.

Baczek, Frank A.; Wojcik, Bruce C.; Jueschke, Alexander A.; Lewis, Daniel M.; Otto, Jack C.; and Tuttle, Lawrence L., to Envirotech Corporation. Recovering copper from a copper-bearing source. 4,359,376, Cl. 204-242.000.

Baer, Ralph H.; and Cope, Leonard D., to Sanders Associates, Inc. Interactive video playback system. 4,359,223, Cl. 273-85.00G.

Bahr, Dietrich J.; and Briska, Marian, to International Business Machines Corporation. Process for reducing traces of abrasion or scratches on the surface of a record carrier. 4,359,484, Cl. 427-14.100.

Baker, Donal E.; and Shuey, Kenneth C., to Westinghouse Electric Corp. Alternating current power controller with DC transistor switching and an internal DC power supply. 4,359,681, Cl. 323-320.000.

Baker International Corporation: *See*—
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Baker, William, III: *See*—
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Balde, Daniel H.; and Boutemy, Gerard E. M., to Produits Chimiques Ugine Kuhlmann. Process for the herbicidal treatment of sorghum using 2,4-diamino-6-chloro-5-methylthio-pyrimidine. 4,359,333, Cl. 71-92.000.

Baldock, Michael J.: *See*—
Gosling, Keith; Jackson, Nigel L.; Leon, Nicholas H.; Mulley, Victor J.; and Baldock, Michael J., 4,359,456, Cl. 424-68.000.

Baldorossi, Blanche N.; and Baldorossi, Raymond F. Game ball entrapment device. 4,359,225, Cl. 273-178.00A.

Baldorossi, Raymond F.: *See*—
Baldorossi, Blanche N.; and Baldorossi, Raymond F., 4,359,225, Cl. 273-178.00A.

Ballo, James A.; and Constable, Charles F., to Vivitar Corporation. Apparatus for crushing articles. 4,358,995, Cl. 100-98.00R.

Balogh, Gyorgy; Hajnal, Miklos; Vajta, Laszlo; Lovanyi, Istvan; and Csenki, Laszlo, to Elektromobil Elektroes Jarmuipari Szovetkezet. Method and apparatus for monitoring the alertness of the driver of a vehicle. 4,359,725, Cl. 340-576.000.

Bannon, Robert P., to Shell Oil Company. Adsorption process. 4,359,380, Cl. 208-310.00Z.

Banyaszati Aknamelyito Vallalat: *See*—
Almasi, Istvan; Kassai, Ferenc; and Nyeste, Laszlo, 4,359,048, Cl. 128-205.120.

Barbour Welting Company, Inc.: *See*—
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Bardsley, Robert F.; and Marks, William M., to General Foods Corporation. Product shaping mechanism for horizontal pouch-making machines. 4,359,072, Cl. 141-71.000.

Barker, Ivan; and Marshall, Geoffrey, to Imperial Chemical Industries, Limited. Polymeric filaments and process for forming such material. 4,359,441, Cl. 264-176.00F.

Barnes, Johnny G.; and Waldo, Paul D., to International Business Machines Corporation. Character set expansion. 4,359,286, Cl. 400-70.000.

Barnett, Kenneth W., to Ashland Oil, Inc. Method of regeneration of an iron phosphate-type catalyst. 4,359,401, Cl. 252-416.000.

Barr, Dallas N.: *See*—
Fox, Clifton S.; Fox, Jay A.; and Barr, Dallas N., 4,359,777, Cl. 372-61.000.

Barrus, Gordon B.; and Matula, Jerry, to Printronix, Inc. Counterbalanced bidirectional shuttle drive having linear motor. 4,359,289, Cl. 400-322.000.

Bartky, W. Scott: *See*—
Zimmerman, Ronald R.; and Bartky, W. Scott, 4,359,724, Cl. 340-575.000.

BASF Aktiengesellschaft: *See*—
Ammermann, Eberhard; Zeeh, Bernd; Hamprecht, Gerhard; and Pommer, Ernst-Heinrich, 4,359,471, Cl. 424-269.000.
Jacobs, Peter; and Oeser, Heinz-Guenter, 4,359,428, Cl. 260-465.00E.
Merger, Franz; and Nestler, Gerhard, 4,359,584, Cl. 564-393.000.
Naarmann, Herbert; Penzien, Klaus; and Viehe, Heinz G., 4,359,563, Cl. 526-250.000.
Paust, Joachim; and Schmidt, Wolfram, 4,359,582, Cl. 549-319.000.
Stein, Dieter; Bachl, Robert; and Richter, Konrad, 4,359,562, Cl. 526-129.000.

BASF Wyandotte Corporation: *See*—
Bernstein, William A.; Davis, John E.; and Gregoria, Joseph R., Jr., 4,359,571, Cl. 528-392.000.
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Narayan, Thirumurti; Ramlow, Gerhard G.; and Kan, Peter T., 4,359,550, Cl. 524-871.000.
Patton, John T., Jr.; Narayan, Thirumurti; and Ramlow, Gerhard G., 4,359,541, Cl. 521-137.000.
Schmolka, Irving R., 4,359,478, Cl. 424-308.000.

Baston, Virgil F., to Energy Incorporated. Fluidized bed incineration of waste. 4,359,005, Cl. 110-245.000.

Bauer, Franz: *See*—
Honegger, Heinz; and Bauer, Franz, 4,359,295, Cl. 404-68.000.

Bauman, Bernard D., to Air Products and Chemicals, Inc. Method for reducing wall fouling in vinyl chloride polymerization. 4,359,560, Cl. 526-74.000.

Baumert, Jean, to Arbed S.A. Method of and apparatus for measuring level and characteristics of a slag layer overlying a metallurgical metal. 4,359,211, Cl. 266-99.000.

Bayer Aktiengesellschaft: *See*—
Dieterich, Dieter; Blank, Heinz U.; Wolters, Erich; and Langenfeld, Norbert, 4,359,426, Cl. 260-453.0AR.
Kramer, Wolfgang; Buchel, Karl; Stetter, Jorg; Frohberger, Paul-Ernst; and Brandes, Wilhelm, 4,359,470, Cl. 424-269.000.
Puppe, Lothar; Voigt, Reiner; Borgardt, Manfred; Moretto, Hans-Heinrich; and Munchenbach, Bernard, 4,359,565, Cl. 528-15.000.
Stetter, Jog; Homeyer, Bernhard; and Hammann, Ingeborg, 4,359,469, Cl. 424-269.000.

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Magee, Walter L., Jr.; and Bayer, Arthur C., 4,359,431, Cl. 260-502.40R.

Bayer, Erich: *See*—
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Bayerische Motoren Werke Aktiengesellschaft: *See*—
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BBC Brown, Boveri & Company Limited: *See*—
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Beauford, Martin H.; and Fritts, Thomas V., to Phillips Petroleum Company. Communication link contention resolution system. 4,359,731, Cl. 340-825.510.
Beaujard, Jean; Menes, Jean-Claude; and Ravoire, Jean, to Commissariat a l'Energie Atomique. Contactor-separator units. 4,359,331, Cl. 55-342.000.
Beecham Group Limited: *See*—
Goudie, Alexander C.; and Ward, Robert W., 4,359,423, Cl. 548-427.000.
Stirling, Irene; and Clarke, Brian P., 4,359,473, Cl. 424-272.000.
Behnisch, Roland, to Braun & Kemmler GmbH & Co. KG. Lid for cookpot. 4,358,992, Cl. 99-345.000.
BEI Electronics, Inc.: *See*—
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Belentepe, Yilmaz C.; Lee, Li-Chung; and Wilder, Arthur H., to Corning Glass Works. Contoured insulation window for evacuated solar collector. 4,359,042, Cl. 126-443.000.
Belko, Robert P.; Boden, Richard M.; and Hanna, Marie R., to International Flavors & Fragrances Inc. Norbornyl oxyacetaldehyde, organoleptic uses thereof and process for preparing same. 4,359,390, Cl. 252-8.600.
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Donnelly, Vincent M.; and Karlicek, Robert F., Jr., 4,359,485, Cl. 427-53.100.
Reinhart, Franz K.; and Shelton, James C., 4,359,260, Cl. 350-96.120.
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Bell, Weldon K.; and Chang, Clarence D., to Mobil Oil Corporation. Process for making epsilon-caprolactam. 4,359,421, Cl. 260-239.30A.
Bellasalma, Gerald J.: *See*—
Altman, Murray; and Bellasalma, Gerald J., 4,358,862, Cl. 4-542.000.
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Bendix Corporation, The: *See*—
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Gallusser, David O.; and Peterson, Ann E., 4,359,255, Cl. 339-90.00R.
Gallusser, David O.; Snyder, Gene L.; Brush, Robert W.; and Joslyn, Carl R., 4,359,256, Cl. 339-90.00R.
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Benesh, Alvin H. Wind turbine rotor. 4,359,311, Cl. 416-197.00A.
Bengtsson, Erik A.; Collin, Per H.; Flink, Sune N.; and Widell, Bjorn, to Stora Kopparbergs Bergslags AB. Apparatus for reducing finely divided iron oxide material. 4,359,212, Cl. 266-172.000.
Benjamin, Thomas A., to Snyder Laboratories, Inc. Means of fastening silicone tubing to a rigid surgical needle. 4,359,053, Cl. 128-339.000.
Benner, Henry F., to Westinghouse Electric Corp. Electrical conductor connection and method of making same. 4,359,599, Cl. 174-94.00R.
Bennison, Michael N., to AMF Incorporated. Means for turning jigs on sewing machines. 4,359,009, Cl. 112-121.120.
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Berger, Thomas W., to Minnesota Mining and Manufacturing Company. Aqueous film-forming foam fire extinguisher. 4,359,096, Cl. 169-44.000.
Bergman, Raymond A. Method for transferring a workpiece in an air float system. 4,359,309, Cl. 414-786.000.
Bergoltz, Anatolio. Cover for a box of electric contacts such as switches, push button, sockets and the like. 4,359,619, Cl. 200-333.000.
Beringer Co., Inc.: *See*—
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Bernard, George G., to Union Oil Co. of California. Method for enhanced oil recovery in reservoirs containing dissolved divalent metal cations. 4,359,093, Cl. 166-273.000.
Bernard, Paul V., to Nash Engineering Company, The. Liquid ring pump seal liquid chiller system. 4,359,313, Cl. 417-68.000.
Bernstein, Seymour: *See*—
Nair, Vijay G.; Joseph, Joseph P.; Lewis, Arthur J.; and Bernstein, Seymour, 4,359,458, Cl. 424-180.000.
Nair, Vijay G.; and Bernstein, Seymour, 4,359,459, Cl. 424-180.000.
Nair, Vijay G.; and Bernstein, Seymour, 4,359,460, Cl. 424-180.000.
Nair, Vijay G.; and Bernstein, Seymour, 4,359,461, Cl. 424-180.000.
Bernstein, William A.; Davis, John E.; and Gregoria, Joseph R., Jr., to BASF Wyandotte Corporation. Process for preparing graft polymer dispersions and polyurethanes prepared therefrom. 4,359,571, Cl. 528-392.000.
Bershas, James P., to Owens-Corning Fiberglas Corporation. Mats for asphalt underlay. 4,359,546, Cl. 524-501.000.
Berta, Sophia. Shoe cleaning device. 4,358,867, Cl. 15-36.000.
Bertrand, Jean-Noel Marie, to Labofina, S.A. Fire-retardant polystyrenic compositions. 4,359,538, Cl. 521-79.000.
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Bledsoe, Billy M. Window insulation system. 4,359,079, Cl. 160-26.000.
Block, Roger R. Connector for electromagnetic impulse suppression. 4,359,764, Cl. 361-119.000.
Bloder, Hans. Lifesaving apparatus for roping down persons. 4,359,139, Cl. 182-234.000.
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Bloom, Stanley M.; Borror, Alan L.; and Foley, James W., to Polaroid Corporation. Thiazine-1,1-dioxide and isothiazole-1,1-dioxide derivatives. 4,359,574, Cl. 544-135.000.
Blount, David H. Process for the production of polyester resins. 4,359,548, Cl. 524-650.000.
Bluzer, Nathan, to Westinghouse Electric Corp. Anti-blooming input structure for charge transfer device. 4,359,651, Cl. 307-311.000.
Blytas, George C.; and Diaz, Zaida, to Shell Oil Company. Process for the removal of acid gases from gaseous streams. 4,359,450, Cl. 423-226.000.
Boden, Richard M., to International Flavors & Fragrances Inc. Organoleptic use of Prins reaction products of diisoamylene derivatives. 4,359,412, Cl. 252-522.00R.
Boden, Richard M.: *See*—
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Boeckh, Franz-Xaver: *See*—
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Boehringer Ingelheim Ltd.: *See*—
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Bohm, Georg G. A., to Firestone Tire & Rubber Company, The. Method of forming self-sealing tire body composite for tires. 4,359,354, Cl. 156-115.000.
Bohm, Horst; Rudolph, Werner; and Massonne, Joachim, to Kali-Chemie AG. Process for preparing bromine- and fluorine-containing halogenated hydrocarbons. 4,359,371, Cl. 204-163.00R.
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Bourgeois, Gerard J., to Polaroid Corporation. Diffusion transfer products with two timing layers for production of transparencies. 4,359,517, Cl. 430-213.000.

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Bowles, Arnold G., to Pressure Technology, Inc. Isostatic method for treating articles with heat and pressure. 4,359,336, Cl. 75-226.000.

Bowman, Brian R.: *See*—
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Bowman, Michael A.; Frank, Steven R.; Stahura, Richard P.; and Swinderman, Robert T., to Martin Engineering Company. Conveyor belt cleaner. 4,359,150, Cl. 198-497.000.

Boyars, Carl, to United States of America, Air Force. Taggants with explosive induced magnetic susceptibility. 4,359,399, Cl. 252-408.000.

Bradley, Gary F.: *See*—
Brevard, Ronald E.; Bradley, Gary F.; and Thomasson, F. Terry, 4,359,200, Cl. 244-122.0AG.

Bragaglia, Giorgio. Plate-edge machining apparatus. 4,359,303, Cl. 409-303.000.

Brandenberger, Albert, to Maschinenfabrik Benninger AG. Warp creel for beam wrapping machine. 4,359,198, Cl. 242-131.100.

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Brandli, John R., to Turek & Heller Machine, Inc. Cutoff press. 4,358,977, Cl. 83-319.000.

Brandt, Inc.: *See*—
Uecker, Richard P.; Horvath, Stephen J.; and Larkin, Francis C., 4,359,062, Cl. 133-2.000.

Brane, Douglas K.: *See*—
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Brane, Earl P.; Brane, Douglas K.; and Hammond, Hilton H. Self-locking filter valve. 4,359,384, Cl. 210-100.000.

Braun & Kemmler GmbH & Co. KG: *See*—
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Bremer, Noel J.: *See*—
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Brevard, Ronald E.; Bradley, Gary F.; and Thomasson, F. Terry, to Stencel Aero Engineering Corporation. Limb retention system for aircraft ejection seat. 4,359,200, Cl. 244-122.0AG.

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Brizgys, Bernardas: *See*—
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Bross, Augustus T., Jr.; and Brown, Michael. Electromagnetically actuated linear reciprocating self-timed motor. 4,359,673, Cl. 318-38.000.

Brother Kogyo Kabushiki Kaisha: *See*—
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Brouwer Turf Equipment Limited: *See*—
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Brower, John. Door barriers. 4,359,081, Cl. 160-243.000.

Brown, Melvin H., to Aluminum Company of America. Protein extraction from green crops. 4,359,530, Cl. 435-68.000.

Brown, Melvin H., to Aluminum Company of America. Method for glucose extraction from green crops. 4,359,532, Cl. 435-99.000.

Brown, Michael: *See*—
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Brown, Michael J., to GAF Corporation. Composition for plant growth regulation. 4,359,334, Cl. 71-95.000.

Brownscombe, Thomas F., to Shell Oil Company. Process for making linear polyethers. 4,359,589, Cl. 568-618.000.

Brummer, Ursula; and Heemann, Volker, to B.A.T. Cigaretten-Fabriken GmbH. Process for the preparation of aromatic substances. 4,359,059, Cl. 131-276.000.

Bruni, Ludovico, to Associated Engineering Italy S.p.A. Piston ring with wear resistant coating. 4,359,230, Cl. 277-216.000.

Brunswick Corporation: *See*—
Frahm, James H., 4,359,021, Cl. 123-185.0BA.
Neufeld, Henry L., 4,359,197, Cl. 242-84.50A.
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Brush, Robert W.: *See*—
Gallusser, David O.; Snyder, Gene L.; Brush, Robert W.; and Joslyn, Carl R., 4,359,256, Cl. 339-90.00R.

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Bucke, Christopher; and Cheetham, Peter S. J., to Talres Development (N.A.) N.V. Production of isomaltulose. 4,359,531, Cl. 435-97.000.

Buckendorf, Louis H.; and Hartranft, Marc D., to Honeywell Inc. Alternating polarity power supply control apparatus. 4,359,654, Cl. 307-571.000.

Budd Company, The: *See*—
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Buehler, Amsey; and Marquis, Robert P., to Plastech Inc. Two piece mandril for quick mounting and release of cones, used in textile industry. 4,359,194, Cl. 242-46.300.

Burk, Gerhard: *See*—
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Burke, David, to Kangol Magnet Limited. Buckles for vehicle seat belt system. 4,358,877, Cl. 24-230.00A.

Burror, Robert: *See*—
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Burroughs Corporation: *See*—
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Burzin, Klaus; and Otte, Werner, to Chemische Werke Huels, Aktiengesellschaft. Odoriferous aliphatic ethers of hydroxymethylcyclododecane. 4,359,588, Cl. 568-579.000.

Butler, Carl E. Dike irrigation. 4,359,297, Cl. 405-36.000.

Butler, Franklin H.: *See*—
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C.E.M.A.N. Special-Container GmbH: *See*—
Geverath, Wulf-Dieter; and Kundt, Karl-Wilhelm, 4,359,084, Cl. 165-12.000.

Cadwell, David C.: *See*—
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Camino, Anthony V.: *See*—
Kramer, Louis T.; Butler, Franklin H.; and Camino, Anthony V., 4,359,199, Cl. 244-100.00R.

Campbell, Charles R.; and Cutchens, Charles E., to Monsanto Company. Catalyst passivation in production of amines. 4,359,585, Cl. 564-492.000.

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Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence: *See*—
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Canon Inc.: *See*—
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Katagiri, Kazuharu; Watanabe, Katsunori; Ohta, Shigeto; Ishikawa, Shozo; and Kitahara, Makoto, 4,359,515, Cl. 430-70.000.

Canon Kabushiki Kaisha: *See*—
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Shimizu, Isamu; Shirai, Shigeru; and Inoue, Eiichi, 4,359,514, Cl. 430-65.000.
Shimizu, Masami; Omi, Junji; Watanabe, Kunio; Uchidoi, Masanori; and Aizawa, Hiroshi, 4,359,277, Cl. 354-219.000.

Caponigro, Dennis A.; and Lopes, Eugene F., to Raychem Corporation. Method for joining heat-recoverable sheet material and resulting article. 4,359,502, Cl. 428-251.000.

Carl Hurth Maschinen- und Zahnradfabrik GmbH & Co.: *See*—
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Carlson, David L., to Renco Corporation. Automatic digital backfat meter. 4,359,055, Cl. 128-660.000.

Carlson, David L., to Renco Corporation. Automatic digital backfat meter. 4,359,056, Cl. 128-660.000.

Carlson, Gordon R. Spring-biased flushing accessory for outboard motors. 4,359,063, Cl. 134-167.00R.

Carothers, James A.; Economy, James; and Ouano, Augustus C., to International Business Machines Corporation. Enhancement of resist development. 4,359,520, Cl. 430-326.000.

Cartier, Jean. Prestressed piezoelectric accelerometer. 4,359,658, Cl. 310-329.000.

Cash, Harry R., Jr.: *See*—
Meighan, Richard M.; and Cash, Harry R., Jr., 4,359,508, Cl. 429-52.000.

Cassel, Knut E., to U.S. Philips Corporation. Lens antenna arrangement. 4,359,741, Cl. 343-754.000.

Castro, Geoffrey. Mailbox. 4,359,185, Cl. 232-17.000.

Caterpillar Tractor Co.: *See*—
Kortering, Randall L., 4,359,248, Cl. 305-46.000.

Cather, Douglas A., to Garlock Inc. Linecutter seal, apparatus and method. 4,359,228, Cl. 277-1.000.

Cattaneo, Leopoldo. Piston rings with control slits. 4,359,229, Cl. 277-216.000.

CBS Inc.: *See*—
Abbagnaro, Louis A.; and Gust, Arthur J., 4,359,768, Cl. 369-55.000.

Celanese Corporation: *See*—
Taskier, Henry T., 4,359,510, Cl. 429-144.000.

Chai, Thomas Y.; Reisch, Franz S.; and Wu, M. T., to Honeywell Inc. Environmentally sealed variable capacitance apparatus. 4,359,720, Cl. 340-365.00C.

Chandalia, Kiran B.; and Preston, Frank J., to Olin Corporation. Graft copolymers from unsaturated monomers and azo di-ester polyols and polyurethanes prepared therefrom. 4,359,542, Cl. 521-137.000.

Chang, Clarence D.: *See—*
Bell, Weldon K.; and Chang, Clarence D., 4,359,421, Cl. 260-239.30A.

Chang, Pan W. Telephone ringing circuit. 4,359,610, Cl. 179-84.00T.

Chang, Shih-Chia, to General Motors Corporation. Detecting NO_x using thin film zinc oxide semiconductor. 4,358,950, Cl. 73-23.000.

Chang, Shih-Chia, to General Motors Corporation. Zinc oxide thin film sensor having improved reducing gas sensitivity. 4,358,951, Cl. 73-23.000.

Chao, James C.; and Jenq, Cheng-Yih, to Hydrocarbon Research, Inc. Multi-stage, adsorption process for separating organic liquids from water. 4,359,592, Cl. 568-916.000.

Chappell, Austin. Car seat tables. 4,359,004, Cl. 108-44.000.

Charmasson, Henri J. A.: *See—*
Lockwood, Lawrence B.; Wells, Michael; and Charmasson, Henri J. A., 4,359,631, Cl. 235-381.000.

Cheetham, Peter S. J.: *See—*
Bucke, Christopher; and Cheetham, Peter S. J., 4,359,531, Cl. 435-97.000.

Chemische Werke Huels, Aktiengesellschaft: *See—*
Burzin, Klaus; and Otte, Werner, 4,359,588, Cl. 568-579.000.

Chemplex Company: *See—*
Hoff, Raymond E.; Pullukat, Thomas J.; and Shida, Mitsuzo, 4,359,403, Cl. 252-429.00B.

Chevron Research Company: *See—*
Scott, John W., 4,359,378, Cl. 208-120.000.

Child, Francis W. Method for placing implant in udder. 4,359,044, Cl. 128-1.00R.

Children's Hospital Medical Center, The: *See—*
Zetter, Bruce R., 4,359,527, Cl. 435-29.000.

Chisholm, John. Process for making a high heat transfer surface composed of perforated or expanded metal. 4,359,181, Cl. 228-183.000.

Chivers, John W. H., to Rolls-Royce Limited. Microwave interferometer. 4,359,683, Cl. 324-58.50B.

Cho, Nakwon, to Electro Nucleonics, Inc. Valve assembly. 4,359,203, Cl. 251-77.000.

Chong, Berni P., to Rohm and Haas Company. Emulsion copolymer anion exchange resins. 4,359,537, Cl. 521-29.000.

Chrysler Corporation: *See—*
Oda, Roy; and Nicholas, Richard W., 4,358,917, Cl. 52-717.000.

Church, David R., to Amway Corporation. Automatic actuator for air freshener dispenser or the like for toilets. 4,358,860, Cl. 4-228.000.

Chwalkowski, Otto: *See—*
Spannhake, Dieter; and Chwalkowski, Otto, 4,359,707, Cl. 335-284.000.

Ciba-Geigy AG: *See—*
Fryberg, Mario; Hagen, Remon; and Scott, John G. V., 4,359,521, Cl. 430-505.000.
Postle, Stephen R., 4,359,522, Cl. 430-512.000.
Postle, Stephen R., 4,359,523, Cl. 430-512.000.

Ciba-Geigy Corporation: *See—*
d'Hondt, Christian; Lohmann, Dieter; and Neuenschwander, Ernst, 4,359,555, Cl. 525-358.000.
Lienhard, Paul; and Hegar, Gert, 4,359,418, Cl. 260-156.000.

Cincinnati Vulcan Company, The: *See—*
Sturwold, Robert J., 4,359,393, Cl. 252-34.700.

Clark Equipment Company: *See—*
Messner, John S.; and Haddock, Louis A., 4,359,121, Cl. 180-69.00R.

Clark, Kenneth G.: *See—*
Hegedus, Charles R.; and Clark, Kenneth G., 4,359,543, Cl. 523-177.000.

Clarke, Brian P.: *See—*
Stirling, Irene; and Clarke, Brian P., 4,359,473, Cl. 424-272.000.

Claussen, Lennart, to Aktiebolaget Bofors. Sprinkler system. 4,359,097, Cl. 169-61.000.

Cleek, Alvin L.: *See—*
Zankl, Frank; Sipek, Charles B.; and Cleek, Alvin L., 4,358,888, Cl. 29-568.000.

Cleminson, John H.; Bowman, Brian R.; and Lauge, Raitis, to Union Carbide Canada Limited. Process for the twin-web hot embossing of thermoplastic film. 4,359,442, Cl. 264-280.000.

Cloup, Philippe, to Editions Edmond Dujardin. Device for setting up contact connections between independent electrical circuits. 4,359,704, Cl. 335-205.000.

Coal Industry (Patents) Limited: *See—*
Wykes, John S.; Surzyn, Piotr M.; Croke, Gerard M.; and Adsley, Ian, 4,359,639, Cl. 250-359.100.

Coca-Cola Company, The: *See—*
Sedam, Jason K.; and Fuerst, William R., 4,359,432, Cl. 261-26.000.

Cohen, Ellis B. Personal monitoring device. 4,359,723, Cl. 340-573.000.

Colclasure, G. Craig. Device for clasping hair. 4,359,061, Cl. 132-144.000.

Cole, George S.; and Schmidt, Karl M. Thrust producing shoe sole and heel. 4,358,902, Cl. 36-28.000.

Cole, George S. Single control proportioning valve for liquids. 4,359,067, Cl. 137-636.400.

Cole, Herbert S., Jr.; and Aftergut, Siegfried, to General Electric Company. Liquid crystal compositions with novel tris-azo dichroic dyes. 4,359,398, Cl. 252-299.100.

Cole National Corporation: *See—*
Sorrells, Frank D., 4,358,913, Cl. 51-216.0LP.

Coleman, David L.; and Kass, John J., to Deere & Company. Self-adjusting brake. 4,359,144, Cl. 188-77.00R.

Collin, Per H.: *See—*
Bengtsson, Erik A.; Collin, Per H.; Flink, Sune N.; and Widell, Bjorn, 4,359,212, Cl. 266-172.000.

Collins, Floyd K.; and Rychlewski, Thaddeus V., to North American Philips Consumer Electronics Corp. Method of mounting a cathode and eyelet for use therewith. 4,359,664, Cl. 313-270.000.

Colognori, Aldo, to Colognori, Aldo; Zuppichini, Sebastian; and McBride, Thomas. Necklace retaining clasp. 4,358,876, Cl. 24-211.00R.

Colt Industries Operating Corp.: *See—*
Michaud, Orean E.; and Kindl, George F., 4,358,895, Cl. 33-147.00L.

Commissariat a l'Energie Atomique: *See—*
Beaujard, Jean; Menes, Jean-Claude; and Ravoire, Jean, 4,359,331, Cl. 55-342.000.

Comper, Louis F.; and Scheiderich, Robert F., to Goodyear Tire & Rubber Company, The. Tire curing bladder lubricant. 4,359,340, Cl. 106-38.220.

Concept Inc.: *See—*
Staub, David E., 4,359,052, Cl. 128-303.100.

Conoco Inc.: *See—*
Goldsmith, Riley G., 4,359,095, Cl. 166-362.000.
Horstman, Jerry L., 4,358,885, Cl. 29-426.500.
Ralston, Daniel L., 4,359,408, Cl. 252-440.000.
Webb, Frederick A.; and Doerr, Richard E., 4,359,298, Cl. 406-3.000.

Consigny, Denis: *See—*
Dominique, Gazel; Dailliez, Huges; and Consigny, Denis, 4,359,043, Cl. 126-444.000.

Constable, Charles F.: *See—*
Ballo, James A.; and Constable, Charles F., 4,358,995, Cl. 100-98.00R.

Construction de Materiels de Mines S.A.: *See—*
Cagnioncle, Georges, 4,359,115, Cl. 175-393.000.

Container Corporation of America: *See—*
Ashby, C. William; and Morse, Stephen A., 4,358,962, Cl. 73-849.000.
Helms, Charles R.; and Bell, Richard L., 4,359,169, Cl. 220-258.000.

Continental Group, Inc., The: *See—*
Hellmer, Ernest W., 4,359,314, Cl. 425-503.000.

Continental Plastics, Inc.: *See—*
Lewis, Duane H., 4,359,171, Cl. 220-307.000.

Conway, Larry J.: *See—*
Tucker, Trevor W.; Conway, Larry J.; and Bouchard, Sylvain L., 4,359,690, Cl. 328-151.000.

Cook, Floyd L., Jr., to McGraw-Edison Company. High speed floor polisher. 4,358,868, Cl. 15-49.00R.

Cooke, Claude E., Jr.: *See—*
Salathiel, William M.; Muecke, Thomas W.; Cooke, Claude E., Jr.; and Li, Norman N., 4,359,391, Cl. 252-8.55C.

Cope, Leonard D.: *See—*
Baer, Ralph H.; and Cope, Leonard D., 4,359,223, Cl. 273-85.00G.

Copley, George A., to Donaldson Company, Inc. Self-cleaning pulsed air cleaner with integral precleaner. 4,359,330, Cl. 55-273.000.

Copyer Co., Ltd.: *See—*
Katagiri, Kazuharu; Watanabe, Katsunori; Ohta, Shigeto; Ishikawa, Shozo; and Kitahara, Makoto, 4,359,513, Cl. 430-58.000.
Katagiri, Kazuharu; Watanabe, Katsunori; Ohta, Shigeto; Ishikawa, Shozo; and Kitahara, Makoto, 4,359,515, Cl. 430-70.000.

Corneille, David M. Coprecipitation process for thermionic cathode type materials. 4,359,489, Cl. 427-77.000.

Corning Glass Works: *See—*
Belentepe, Yilmaz C.; Lee, Li-Chung; and Wilder, Arthur H., 4,359,042, Cl. 126-443.000.

Corrugated Drum Systems, Inc.: *See—*
Perkins, David, Jr., 4,359,182, Cl. 229-45.00R.

Cosco, Inc.: *See—*
Gerken, Donald L.; Moore, Donald L.; and Degnen, Stephen M., 4,359,242, Cl. 297-5.000.

Costruzioni Meccaniche Industriali Genovesi: *See—*
Noto La Diega, Michele, 4,359,177, Cl. 222-591.000.

Cozzi, Christopher A. Reflux chair. 4,359,045, Cl. 128-24.00R.

Crawford, Wheeler C.: *See—*
Patterson, John A.; Crawford, Wheeler C.; and Wilson, James R., 4,359,594, Cl. 585-434.000.

Createchnic Patent AG: *See—*
Dubach, Werner F., 4,359,166, Cl. 215-272.000.

Crema, Erhard. Device for separating oil from an oil-water mixture. 4,359,386, Cl. 210-336.000.

Creps, John A. Method for galvanizing and plastic coating steel. 4,358,887, Cl. 29-527.400.

Crillesen, Jan O., to Ole Leth. Assembling plug. 4,359,294, Cl. 403-406.000.

Croke, Gerard M.: *See—*
Wykes, John S.; Surzyn, Piotr M.; Croke, Gerard M.; and Adsley, Ian, 4,359,639, Cl. 250-359.100.

Cronkhite, Daniel R. Vibrator for screed boards. 4,359,296, Cl. 404-114.000.

Crosby, Thomas G., to Procter & Gamble Company, The. Fluid shortening composition having anti-gumming properties. 4,359,482, Cl. 426-606.000.

Crotty, David E., to Occidental Chemical Corporation. Stabilized trivalent chromium passivate composition and process. 4,359,348, Cl. 148-6.160.

Crucible Inc.: *See*—
Peterson, Curtis P., 4,359,210, Cl. 266-87.000.

Crutcher, Lewis P. Musician's chair. 4,359,243, Cl. 297-16.000.

Csenki, Laszlo: *See*—
Balogh, Gyorgy; Hajnal, Miklos; Vajta, Laszlo; Lovanyi, Istvan; and Csenki, Laszlo, 4,359,725, Cl. 340-576.000.

Cutchens, Charles E.: *See*—
Campbell, Charles R.; and Cutchens, Charles E., 4,359,585, Cl. 564-492.000.

Cysewski, Gerald R.: *See*—
Wilke, Charles R.; Maiorella, Brian L.; Blanch, Harvey W.; and Cysewski, Gerald R., 4,359,533, Cl. 435-161.000.

Czoch, Jerzy W.; Seagrove, Douglas J. W.; Green, Robert J.; and Morgan, Martin D., to Molins, Ltd. Production line flow control. 4,359,152, Cl. 198-572.000.

Dachs, Georgianna M., executrix: *See*—
Dachs, Norman W., deceased; Ginter, James W.; and Pawlak, Joseph A., 4,359,590, Cl. 568-702.000.

Dachs, Norman W., deceased (by Dachs, Georgianna M., executrix); Ginter, James W.; and Pawlak, Joseph A., to Occidental Chemical Corporation. Titanate ester-stabilized bisphenols. 4,359,590, Cl. 568-702.000.

Da Fonte, Bento, Jr., to Occidental Chemical Corporation. Trivalent chromium passivate solution and process. 4,359,345, Cl. 148-6.200.

Da Fonte, Bento, Jr., to Occidental Chemical Corporation. Trivalent chromium passivate solution and process for yellow passivate film. 4,359,346, Cl. 148-6.200.

Da Fonte, Bento, Jr., to Occidental Chemical Corporation. Chromium-free passivate solution and process. 4,359,347, Cl. 148-6.14R.

Dagani, Michael J., to Ethyl Corporation. Acid stabilized compositions of 2,2,2-trichloro-1-(N-hydrocarbylpyrryl-2)-ethanol. 4,359,422, Cl. 548-562.000.

Daido Sangyo Co., Ltd.: *See*—
Takeichi, Yasuo, 4,359,627, Cl. 219-523.000.

Dailliez, Huges: *See*—
Dominique, Gazel; Dailliez, Huges; and Consigny, Denis, 4,359,043, Cl. 126-444.000.

Daimler-Benz A.G.: *See*—
Schmidt, Willi; Schwuchow, Norbert; and Burk, Gerhard, 4,359,120, Cl. 180-69.00R.
Stotz, Manfred, 4,359,020, Cl. 123-145.00A.

Dainippon Pharmaceutical Co., Ltd.: *See*—
Matsumoto, Jun-ichi; Takase, Yoshiyuki; and Nishimura, Yoshiro, 4,359,578, Cl. 544-362.000.

Dana Corporation: *See*—
Schultz, Donald C.; and Jones, Charles R., 4,359,142, Cl. 184-11.00R.

Dansk Industri Syndikat A/S: *See*—
Jacobsen, Ole A., 4,359,083, Cl. 164-404.000.

d'Arcy, Rainer-Lionel; and Schmidt, Hartmut, to Varta Batterie Aktiengesellschaft. Automatic water refilling of storage batteries. 4,359,071, Cl. 141-1.000.

Daugherty, Jerome M.: *See*—
Stecklein, Alfred L.; and Daugherty, Jerome M., 4,359,355, Cl. 156-138.000.

Davies, Ronald C., to Third Wave Electronics Company, Inc. Coin acceptor or rejector. 4,359,148, Cl. 194-100.00A.

Davis, Gordon J., to Maytag Company, The. Rotation sensing control. 4,359,146, Cl. 192-136.000.

Davis, John E.: *See*—
Bernstein, William A.; Davis, John E.; and Gregoria, Joseph R., Jr., 4,359,571, Cl. 528-392.000.

Davis, Thomas G.; and Weaver, Max A., to Eastman Kodak Company. Colored polyester containing copolymerized dyes as colorants. 4,359,570, Cl. 528-289.000.

Dawans, Francois; Durand, Jean-Pierre; and Binet, Daniel, to Institut Francais du Petrole. Copolymers from acrylate dicarboxylic compounds and diisobutylene as oil additives. 4,359,325, Cl. 44-62.000.

Daxer, Georg: *See*—
Mahrus, Duraid; and Daxer, Georg, 4,358,881, Cl. 29-156.50R.

Day, Charles M., to Motorola, Inc. (Corporate Offices). High speed squelch circuit. 4,359,780, Cl. 455-222.000.

Day, Edward G.; Paddock, Gordon R.; and Seidewand, Edward H., to General Motors Corporation. Pressure operated proportional air management valve. 4,358,927, Cl. 60-290.000.

De La Mare, Harold E.; and Jones, Paul D., to Shell Oil Company. Curable epoxy-vinyl ester compositions. 4,359,370, Cl. 204-159.150.

Dean, Leron R.: *See*—
Watkins, Kenneth R.; and Dean, Leron R., 4,359,557, Cl. 525-437.000.

Deere & Company: *See*—
Coleman, David L.; and Kass, John J., 4,359,144, Cl. 188-77.00R.
Van Natta, Terry L., 4,359,105, Cl. 172-386.000.

Degnen, Stephen M.: *See*—
Gerken, Donald L.; Moore, Donald L.; and Degnen, Stephen M., 4,359,242, Cl. 297-5.000.

Deguchi, Takashi; Usui, Masahiro; and Higashio, Yasuhiko, to Sumitomo Chemical Company, Limited. Method of purification of β-phenylethyl alcohol. 4,359,365, Cl. 203-55.000.

de Jong, Joannes N. M., to Sperry Corporation. Traveling wave flow meter. 4,358,954, Cl. 73-269.000.

Demeter, Laszlo J.: *See*—
Smith, Ian D.; Demeter, Laszlo J.; and Nielsen, Kurt E., 4,359,660, Cl. 378-119.000.

Dennon, Jack D. Linear indexer. 4,359,677, Cl. 318-687.000.

den Otter, Gerrit J., to Shell Oil Company. Catalyst preparation. 4,359,409, Cl. 252-455.00Z.

DeSantis, Charles M., to United States of America, Army. Broadband RF isolator. 4,359,743, Cl. 343-792.000.

de Stoutz, William P. Mobile station for distributing beverages. 4,359,073, Cl. 141-89.000.

Deutsche Fernsprecher Gesellschaft mbH Marburg: *See*—
Hannig, Hubert; Krapp, Karl H.; and Molleken, Heinz, 4,359,607, Cl. 179-6.030.

Devos, Francis; Beuque, Patrick; and Huchette, Michel, to Roquette Freres. Corn steeping process for products thus obtained and their use in the manufacture of penicillin. 4,359,528, Cl. 435-43.000.

De Vries, Luitzen: *See*—
Lam, Wilhelmus J.; and De Vries, Luitzen, 4,358,959, Cl. 73-432.00R.

de Waard, Peter J.: *See*—
Acket, Gerard A.; de Waard, Peter J.; Khoe, Giok D.; Wirtz, Gijsbrecht C.; and Rozzi, Tullio E., 4,359,776, Cl. 372-46.000.

Dey, Phillip; Fearns, Peter; Plessner, Karl W.; Pickup, Kenneth H.; Gaylard, Bernard; and Murphy, Arthur B., to BICC Limited. Overhead electric transmission systems. 4,359,598, Cl. 174-40.00R.

d'Hondt, Christian; Lohmann, Dieter; and Neuenschwander, Ernst, to Ciba-Geigy Corporation. Salts formed from formamidines with polymers containing sulfonic acid groups. 4,359,555, Cl. 525-358.000.

Diaz, Zaida: *See*—
Blytas, George C.; and Diaz, Zaida, 4,359,450, Cl. 423-226.000.

Dickey-john Corporation: *See*—
Bachman, Wesley J., 4,359,734, Cl. 343-8.000.

Dickman, John E.; and Donley, William B., to General Motors Corporation. Process for making a late programming enhanced contact ROM. 4,358,889, Cl. 29-571.000.

Diesel Kiki Co., Ltd.: *See*—
Ohie, Tomonori, 4,359,032, Cl. 123-458.000.
Uchida, Kazuo, 4,359,191, Cl. 239-533.500.

Dieterich, Dieter; Blank, Heinz U.; Wolters, Erich; and Langenfeld, Norbert, to Bayer Aktiengesellschaft. Process for the production of aromatic isocyanates containing aromatically bound sulfochloride groups. 4,359,426, Cl. 260-453.0AR.

Di Pietro, Massimo, to Texas Instruments Incorporated. In tone generators for electronic musical instruments. 4,358,982, Cl. 84-1.240.

DiTullio, Venanzio, to Albany International Corp. Hydrolysis resistant polyaryletherketone fabric. 4,359,501, Cl. 428-245.000.

Dr. Carl Hahn, G.m.b.H: *See*—
Friese, Axel, 4,359,357, Cl. 156-201.000.

Dr. Johannes Heidenhain GmbH: *See*—
Kraus, Heinz; and Bayer, Erich, 4,359,519, Cl. 430-321.000.

Doerr, Richard E.: *See*—
Webb, Frederick A.; and Doerr, Richard E., 4,359,298, Cl. 406-3.000.

Dolan, Bruce I., to Northern Telecom Limited. Tray for organizing optical fiber splices and enclosures embodying such trays. 4,359,262, Cl. 350-96.200.

Dolhyj, Serge R.; Milberger, Ernest C.; and Bremer, Noel J., to Standard Oil Company. Catalyst compositions especially useful for preparation of unsaturated acids. 4,359,407, Cl. 252-437.000.

Dominguez, Carlos: *See*—
Langer, Peter; and Dominguez, Carlos, 4,359,715, Cl. 340-52.00R.

Dominique, Gazel; Dailliez, Huges; and Consigny, Denis. Roofing member for collecting solar energy. 4,359,043, Cl. 126-444.000.

Dominquez, Richard J. G.: *See*—
McEntire, Edward E.; and Dominquez, Richard J. G., 4,359,540, Cl. 521-129.000.

Donaldson Company, Inc.: *See*—
Copley, George A., 4,359,330, Cl. 55-273.000.
Wagner, Wayne M.; and Winnes, David E., 4,359,135, Cl. 181-266.000.

Donley, William B.: *See*—
Dickman, John E.; and Donley, William B., 4,358,889, Cl. 29-571.000.

Donnelly, Vincent M.; and Karlicek, Robert F., Jr., to Bell Telephone Laboratories, Incorporated. Radiation induced deposition of metal on semiconductor surfaces. 4,359,485, Cl. 427-53.100.

Dooley, James L.: *See*—
Latter, Albert L.; Dooley, James L.; and Hammond, R. Philip, 4,359,118, Cl. 180-54.00B.

Dostoomian, Ashod S.; Richard, Alan A.; Traub, Alan C.; and Vanzetti, Riccardo, to Vanzetti Infrared & Computer Systems, Inc. Controller for spot welding. 4,359,622, Cl. 219-110.000.

Dove, Norman F. Apparatus to supply steam including steam evacuation. 4,358,900, Cl. 34-54.000.

Dow Chemical Company, The: *See*—
Skach, Edward J., Jr., 4,359,344, Cl. 134-2.000.
Wright, Donald R., 4,359,361, Cl. 156-497.000.

Dow Corning Corporation: *See*—
LeGrow, Gary E.; and Kalinowski, Robert E., 4,359,566, Cl. 528-16.000.

Doyle, Padraic A.: *See*—
Pope, William L.; Pines, Howard S.; Doyle, Padraic A.; and Silvester, Lenard F., 4,358,930, Cl. 60-647.000.

Dravo Corporation: *See*—
Karnofsky, George B.; and Hansotte, Roger J., 4,359,417, Cl. 260-123.500.

Dresser Industries, Inc.: *See—*
Smith, William S., 4,359,107, Cl. 173-12.000.
Dubach, Werner F., to Createchnic Patent AG. Container closure cap. 4,359,166, Cl. 215-272.000.
Dumont, Francois, to Thomson-CSF. Apparatus for the detection of voice signals. 4,359,604, Cl. 179-1.0SC.
Du Pont de Nemours, E. I., and Company: *See—*
Mastrangelo, Sebastian V. R., 4,359,414, Cl. 523-200.000.
Nacci, George R.; and Pie, Donald G., 4,359,516, Cl. 430-106.600.
Schweitzer, Francis E., 4,359,500, Cl. 428-212.000.
Siemionko, Roger K., 4,359,569, Cl. 528-190.000.
Troy, Daniel J., 4,359,504, Cl. 428-403.000.
Durai-Swamy, Kandaswamy, to Occidental Research Corporation. Apparatus for entrained coal pyrolysis. 4,359,363, Cl. 202-99.000.
Durand, Jean-Pierre: *See—*
Dawans, Francois; Durand, Jean-Pierre; and Binet, Daniel, 4,359,325, Cl. 44-62.000.
Duskin Franchise Co., Ltd.: *See—*
Miyoshi, Ichiro, 4,359,293, Cl. 403-58.000.
Duval, Ernest H.: *See—*
Thompson, Harold R.; and Duval, Ernest H., 4,359,292, Cl. 401-215.000.
Eagan, John J.: *See—*
Murch, Robert M.; and Eagan, John J., 4,358,899, Cl. 34-15.000.
Eastman Kodak Company: *See—*
Davis, Thomas G.; and Weaver, Max A., 4,359,570, Cl. 528-289.000.
Edwards, Ray, 4,359,553, Cl. 525-240.000.
Howe, Dennis G., 4,359,750, Cl. 346-135.100.
Watkins, Kenneth R.; and Dean, Leron R., 4,359,557, Cl. 525-437.000.
Eaton Corporation: *See—*
Luy, William R., 4,359,710, Cl. 338-51.000.
Eberle, Kelly L.: *See—*
Eberle, William; and Eberle, Kelly L., 4,359,075, Cl. 141-177.000.
Eberle, William; and Eberle, Kelly L., to General Battery Corporation. Multiple position and work station for battery fabrication. 4,359,075, Cl. 141-177.000.
Ebey, Edward: *See—*
Maryonovich, Michael C.; and Ebey, Edward, 4,359,207, Cl. 254-272.000.
Eckert, Robert D.: *See—*
Rogers, Howard G.; Eckert, Robert D.; Sahatjian, Ronald A.; and Sulesky, Robert A., 4,359,397, Cl. 252-194.000.
Economy, James: *See—*
Carothers, James A.; Economy, James; and Ouano, Augustus C., 4,359,520, Cl. 430-326.000.
Editions Edmond Dujardin: *See—*
Cloup, Philippe, 4,359,704, Cl. 335-205.000.
Edlund, Harry. Can closure provided with opening tab. 4,359,170, Cl. 220-268.000.
Edwards, Ray, to Eastman Kodak Company. Polyethylene extrusion coating compositions. 4,359,553, Cl. 525-240.000.
Egan, William E., to Goodyear Tire & Rubber Company, The. Pneumatic tire having puncture sealing feature and method of making same. 4,359,078, Cl. 152-347.000.
Eggert, Walter S., Jr., to Budd Company, The. Underride device for a trailer or truck. 4,359,239, Cl. 293-132.000.
Eguchi, Osamu; and Hattori, Mitsutoshi, to Nippondenso Co., Ltd. Magneto-resistance type contactless rotational angle detecting apparatus. 4,359,685, Cl. 324-208.000.
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Electricity Trust of South Australia, The: *See—*
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Electro-Nite Co.: *See—*
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Eltra Corporation: *See—*
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Emdee Corporation: *See—*
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Endres, Wilhelm; and Mukherjee, Dilip, to BBC Brown, Boveri & Company Limited. Cooled wall. 4,359,310, Cl. 415-115.000.
Energy Incorporated: *See—*
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Rooney, Craig E., 4,359,613, Cl. 200-5.00R.
England, Michael D. D., to O'Reilly, David. Audio control system. 4,359,601, Cl. 179-1.00D.
Envirex Inc.: *See—*
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Eriksson, Larry J., to Nelson Industries Inc. Muffler construction. 4,359,136, Cl. 181-269.000.
Erlichman, Irving; and Lothrop, John W., to Polaroid Corporation. Accumulator for use with modular production line units. 4,359,149, Cl. 198-347.000.
ESB Corporation: *See—*
Turillon, Pierre P.; Hull, Michael N.; and Nordblom, George F., 4,358,892, Cl. 29-623.500.
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Evers, Robert C., to United States of America, Air Force. Thermooxidatively stable articulated p-benzobisoxazole and p-benzobisthiazole polymers. 4,359,567, Cl. 528-179.000.
Exxon Production Research Co.: *See—*
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Exxon Research and Engineering Co.: *See—*
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Fallon, Ray D.; and Stubbs, Richard D., to Hughes Aircraft Company. Blast enabled missile detent/release mechanism. 4,358,983, Cl. 89-1.806.
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Fasterding, Henning; Franz, Herbert; and Walker, Gerhard, to Robert Bosch GmbH. Voltage regulator for generators. 4,359,656, Cl. 310-68.00R.
Favonio, Osvaldo. Dentist's drill chuck. 4,358,971, Cl. 81-55.000.
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Feldman, Julian, to National Distillers & Chemical Corp. Process for recovering ethanol from dilute aqueous solutions employing solid sorbent. 4,359,593, Cl. 568-916.000.
Feldstein, Nathan, to Surface Technology, Inc. Metallic articles having dual layers of electroless metal coatings incorporating particulate matter. 4,358,922, Cl. 57-401.000.
Feldstein, Nathan, to Surface Technology, Inc. Composite coatings for open-end machinery parts. 4,358,923, Cl. 57-401.000.
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Fiala, Ernst, to Volkswagenwerk Aktiengesellschaft. Apparatus for providing uniform acceleration for an internal combustion engine. 4,359,028, Cl. 123-350.000.
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Firestone Tire & Rubber Company, The: *See—*
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Fischer, Klaus, to Glasbau Heinrich Hahn GmbH & Co. KG. Display case and a modular display case system. 4,359,249, Cl. 312-198.000.

Fischer & Porter Company: *See*—
Schmoock, Roy F., 4,358,963, Cl. 73-861.120.
Fisher, Charles B.; and Fisher, Sidney T. Recovery of underground hydrocarbons. 4,359,091, Cl. 166-248.000.
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Fisher, Charles B.; and Fisher, Sidney T., 4,359,091, Cl. 166-248.000.
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Fleischer, Helmut: *See*—
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Foord, Peter M., to Electricity Trust of South Australia, The. Load shedding control means. 4,359,644, Cl. 307-40.000.
Ford Motor Company: *See*—
Greene, Edward S.; and Knight, Eric M., 4,358,947, Cl. 73-3.000.
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Fouss, James L.; Parker, John J.; and Lytle, Donald A., to Hancor, Inc. Subterranean plastic tank. 4,359,167, Cl. 220-72.000.
Fox, Clifton S.; Fox, Jay A.; and Barr, Dallas N., to United States of America, Army. High efficiency transversely excited electrodeless gas lasers. 4,359,777, Cl. 372-61.000.
Fox, Jay A.: *See*—
Fox, Clifton S.; Fox, Jay A.; and Barr, Dallas N., 4,359,777, Cl. 372-61.000.
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Frahm, James H., to Brunswick Corporation. Recoil starter. 4,359,021, Cl. 123-185.0BA.
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Franks, Larry A.; and Lutz, Stephen S., to United States of America, Energy. Liquid scintillators for optical fiber applications. 4,359,641, Cl. 250-486.100.
Frankus, Andrew, to Anderson Company of Indiana, The. Wiper arm driving mechanism. 4,358,869, Cl. 15-250.300.
Franz, Herbert: *See*—
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Franz, John E.; and Kaufman, Robert J., to Monsanto Company. Amide and hydrazide derivatives of N-trifluoroacetyl-N-phosphonomethylglycine as herbicides. 4,359,332, Cl. 71-86.000.
Fraser, William A.; Maraschin, Norma J.; Karol, Frederick J.; and Makai, Alexander J., to Union Carbide Corporation. High tear strength polymers. 4,359,561, Cl. 526-88.000.
Frazita, Richard F., to Hazeltine Corporation. Phased array antenna with extinguishable phase shifters. 4,359,740, Cl. 343-703.000.
Freiwald, Edward S.: *See*—
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Fremery, Max; Keim, Karl-Heinz; and Korff, Joachim, to Union Rheinische Braunkohlen Kraftstoff Aktiengesellschaft. Process for the o-substitution of phenols. 4,359,591, Cl. 568-804.000.
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Friedrich Grohe Armaturenfabrik GmbH & Co.: *See*—
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Friese, Axel, to Dr. Carl Hahn, G.m.b.H. Method of making tampon with a non-woven wrap. 4,359,357, Cl. 156-201.000.
Fritsch, Gunter; Vollmer, Heinz; and Schmitz, Walter, to Gebr. Happich GmbH. Method and apparatus for producing an extruded plastic bar with plural surface characteristics. 4,359,439, Cl. 264-135.000.
Fritts, Thomas V.: *See*—
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Frohberger, Paul-Ernst: *See*—
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Fryberg, Mario; Hagen, Remon; and Scott, John G. V., to Ciba-Geigy AG. Light-sensitive color photographic material. 4,359,521, Cl. 430-505.000.
Fuchs, Victor: *See*—
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Fuerst, William R.: *See*—
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Fujioka, Yoshiki, to Fujitsu Fanuc Limited. Control system for stopping spindle at predetermined rotational position. 4,359,676, Cl. 318-653.000.
Fujitsu Fanuc Limited: *See*—
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Fujitsu Limited: *See*—
Hayakawa, Masahiro; and Hirano, Yutaka, 4,359,754, Cl. 357-22.000.
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Fukatsu, Shunzo: *See*—
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Fukuda, Tadaji; Shirai, Shigeru; and Kanbe, Junichiro, to Canon Kabushiki Kaisha. Layered photoconductive member having barrier of silicon and halogen. 4,359,512, Cl. 430-57.000.
Fukui, Hisao, to Sony Corporation. Timer circuit. 4,359,655, Cl. 307-595.000.
Fulton Manufacturing Corporation: *See*—
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Fung, Shun C., to Exxon Research and Engineering Co. Highly dispersed supported group VIII metal-phosphorus compounds, and highly dispersed, supported group VIII metal-arsenic and a process for making said compounds. 4,359,406, Cl. 252-437.000.
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Furuhashi, Shoji; Asano, Masaharu; and Tamura, Hideyuki, to Nissan Motor Company, Limited. Air/fuel ratio control system for an internal combustion engine. 4,359,029, Cl. 123-440.000.
Furukado, Shoji: *See*—
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Furuya, Tadashi; and Ota, Shuji, to Nissan Diesel Motors Co., Ltd. Exhaust gas recycling in diesel engines. 4,359,033, Cl. 123-569.000.
Fusion Systems Corporation: *See*—
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Futamura, Yoshiki: *See*—
Maruyama, Eisuke; Kobayashi, Hiromitsu; Mitsuhashi, Masakazu; Takeuchi, Hiromichi; Futamura, Yoshiki; and Suzuki, Naohito, 4,359,074, Cl. 141-94.000.
Fuzesi, Stephen; and Bayusik, John G., to Olin Corporation. Methyl glucoside-amine-based polyether polyols and process of preparation. 4,359,573, Cl. 536-17.200.
Fyie, Joseph A.; and Peters, Thomas E., to Morrison-Knudsen Forest Products Company, Inc. Distribution apparatus. 4,359,151, Cl. 198-525.000.
G+. H Montage GmbH: *See*—
Geverath, Wulf-Dieter; and Kundt, Karl-Wilhelm, 4,359,084, Cl. 165-12.000.
Gaede, Georg, to Bayerische Motoren Werke Aktiengesellschaft. Process for preventing the pumping of a hydraulic valve clearance compensating element in valve operating mechanisms of internal combustion engines. 4,359,019, Cl. 123-90.460.
GAF Corporation: *See*—
Brown, Michael J., 4,359,334, Cl. 71-95.000.
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Gagnon, Michel. Ground preparation tool for reforestation. 4,359,101, Cl. 172-38.000.
Gainer, Gordon C.; Luck, Russell M.; and Grant, Hendrie J., to Thermo King Corporation. Thermally stable lubricants for refrigerator systems. 4,359,394, Cl. 252-54.000.
Gali Mallofre, Salvador. Control elements for gearbox ratio selectors in heavy vehicles. 4,358,988, Cl. 91-167.00R.
Gallagher, James A.; and Brizgys, Bernardas, to BASF Wyandotte Corporation. Polyurethane sealant compositions. 4,359,549, Cl. 524-791.000.
Gallart, Robert. Power tool. 4,358,946, Cl. 72-392.000.
Gallusser, David O.; Hemmer, Valentine J.; and Toombs, Gary C., to Bendix Corporation, The. Electrical connector coupling ring having an integral spring. 4,359,254, Cl. 339-89.00M.
Gallusser, David O.; and Peterson, Ann E., to Bendix Corporation, The. Coupling ring having detent means. 4,359,255, Cl. 339-90.00R.
Gallusser, David O.; Snyder, Gene L.; Brush, Robert W.; and Joslyn, Carl R., to Bendix Corporation, The. Electrical connector coupling member. 4,359,256, Cl. 339-90.00R.
Galvin, Aaron A.; and Harvey, Roy L., to American District Telegraph Company. Two-wire multi-zone alarm system. 4,359,721, Cl. 340-525.000.
Gange, Robert A., to RCA Corporation. Modulator structures and methods for multi-electron gun display devices. 4,359,671, Cl. 315-366.000.
Garavuso, Gerald M., to Xerox Corporation. Direct control paddle wheel. 4,359,219, Cl. 271-236.000.
Garcia, Alexander, to Gulf & Western Manufacturing Company. Quick release snap. 4,358,880, Cl. 24-241.0PS.

Gardner, Keith L., to B. F. Goodrich Company, The. Process for producing peroxydicarbonates. 4,359,427, Cl. 260-463.000.
Garlock Inc.: *See—*
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Garner, Lloyd L.; Vincent, Joe W.; and Baker, William, III, to Smith International, Inc. Hybrid diamond insert platform locator and retention method. 4,359,112, Cl. 175-329.000.
Garner, Lloyd L., to Smith International, Inc. Method of fabrication of rock bit inserts of tungsten carbide (WC) and cobalt (Co) with cutting surface wear pad of relative hardness and body portion of relative toughness sintered as an integral composite. 4,359,335, Cl. 75-208.00R.
Garrison, Marvin C., to Ampex Corporation. Optical measuring method and apparatus. 4,359,282, Cl. 356-376.000.
Gates Rubber Company, The: *See—*
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Gavagan, James A.; Gulette, Ronald S.; Petersen, Carl M., III; West, Frank; and Brennan, William E., to Irvin Industries Inc. Static belt loop snubber system. 4,359,237, Cl. 280-806.000.
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Gaylard, Bernard: *See—*
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Gebr. Happich GmbH: *See—*
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Geiger, Allen R., to Aero-Geophysical, Inc. Clear air turbulence detection. 4,359,640, Cl. 250-372.000.
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General Electric Company: *See—*
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Horvay, Julius B., 4,358,933, Cl. 62-155.000.
Jenkins, Thomas E., 4,359,250, Cl. 312-228.000.
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General Motors Corporation: *See—*
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Chang, Shih-Chia, 4,358,951, Cl. 73-23.000.
Day, Edward G.; Paddock, Gordon R.; and Seidewand, Edward H., 4,358,927, Cl. 60-290.000.
Dickman, John E.; and Donley, William B., 4,358,889, Cl. 29-571.000.
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Magyar, Joseph J., 4,358,879, Cl. 24-230.00A.
Mittelstadt, Roy A., 4,359,234, Cl. 280-438.00R.
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Gerard, Roger E. J., to Marconi Company Limited, The. Amplifiers. 4,359,696, Cl. 330-151.000.
Gerben, Ralph D.; and Walters, Harry J., to M. S. Willett, Inc. Three axis transfer apparatus. 4,359,153, Cl. 198-621.000.
Gerber, Arthur M., to Polaroid Corporation. Method of preparing a photosensitive silver halide element. 4,359,525, Cl. 430-567.000.
Gerding, Charles C.; Stoll, Joseph M.; and Majors, Harold L., to Jones & Laughlin Steel Corporation. Apparatus for bottom casting metal ingots. 4,359,202, Cl. 249-109.000.
Gerecke, Max; Haefely, Willy; Hunkeler, Walter; Kyburz, Emilio; Mohler, Hanns; Pieri, Lorenzo; and Polc, Petar, to Hoffmann-La Roche Inc. Thieno-1,4-diazepin-5-ones and benzo-1,4-diazepin-5-ones. 4,359,420, Cl. 260-239.30B.
Gerken, Donald L.; Moore, Donald L.; and Degnen, Stephen M., to Cosco, Inc. Collapsible baby walker-jumper. 4,359,242, Cl. 297-5.000.
Gerlach, Klaus; and Wick, Gerhard, to Akzo N.V. Production of polyurethane embedding materials and use thereof. 4,359,359, Cl. 156-294.000.
Gerring, Harold E., to Ger-Win Vans, Inc. Vehicle top structure and method of assembly. 4,358,883, Cl. 29-401.100.
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Geverath, Wulf-Dieter; and Kundt, Karl-Wilhelm, to C.E.M.A.N. Special-Container GmbH; and G+. H Montage GmbH. Temperature tank container. 4,359,084, Cl. 165-12.000.
Gewerkschaft Eisenhutte Westfalia: *See—*
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Gewerkschaft Schalker Eisenhutte: *See—*
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Geyer, Ludwig, to M.A.N. Maschinenfabrik Augsburg-Nurnberg A.G. Bus frame for a motor bus. 4,358,914, Cl. 52-643.000.
Giessen, Bill C.: *See—*
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Gifford, William E.: *See—*
Stoltman, Donald D.; and Gifford, William E., 4,359,031, Cl. 123-452.000.
Gilbert, Lawrence A.: *See—*
Ward, James F.; and Gilbert, Lawrence A., 4,359,413, Cl. 252-527.000.
Gillette Company, The: *See—*
Thompson, Harold R.; and Duval, Ernest H., 4,359,292, Cl. 401-215.000.
Ginter, James W.: *See—*
Dachs, Norman W., deceased; Ginter, James W.; and Pawlak, Joseph A., 4,359,590, Cl. 568-702.000.
Giorgio, Charles. Rifle bolt assemblies. 4,358,986, Cl. 89-142.000.
Gittleman, Neal. Dental implant. 4,359,318, Cl. 433-173.000.
Glasbau Heinrich Hahn GmbH & Co. KG: *See—*
Fischer, Klaus, 4,359,249, Cl. 312-198.000.
Goldschmidt, Robert E.; Ku, Charles C.; and Townzen, David A., to Kaye Instruments, Inc. Zero level correction apparatus. 4,359,746, Cl. 346-33.00R.
Goldschmidt, Robert E.; Ku, Charles C.; and Townzen, David A., to Kaye Instruments, Inc. Thermocouple recorder. 4,359,747, Cl. 346-33.0TP.
Goldschmidt, Robert E.; Ku, Charles C.; and Townzen, David A., to Kaye Instruments, Inc. Stepper motor for data recorder. 4,359,751, Cl. 346-136.000.
Goldsmith, Riley G., to Conoco Inc. Well support system. 4,359,095, Cl. 166-362.000.
Gonzalez, Eduardo B. Self compensating seal apparatus. 4,359,111, Cl. 175-227.000.
Goodyear Aerospace Corporation: *See—*
Martin, Gregory L., 4,359,732, Cl. 343-5.0CM.
Goodyear Tire & Rubber Company, The: *See—*
Comper, Louis F.; and Scheiderich, Robert F., 4,359,340, Cl. 106-38.220.
Egan, William E., 4,359,078, Cl. 152-347.000.
Gordon, Robert T. Atherosclerosis treatment method. 4,359,453, Cl. 424-1.000.
Gosling, Keith; Jackson, Nigel L.; Leon, Nicholas H.; Mulley, Victor J.; and Baldock, Michael J., to Lever Brothers Company. Antiperspirant activity of basic aluminum compounds. 4,359,456, Cl. 424-68.000.
Gotou, Makoto, to Matsushita Electric Industrial Co., Ltd. Control system for a DC motor. 4,359,674, Cl. 318-318.000.
Goudie, Alexander C.; and Ward, Robert W., to Beecham Group Limited. 10H-1-Alkyl-10-oxabenzo,5,6 cyclohepta[1,2-G]pyrrole-2-acetic acids. 4,359,423, Cl. 548-427.000.
Gould, Francis E.; and Johnston, Christian W., to Tyndale Plains-Hunter, Ltd. Polyurethane diacrylate compositions. 4,359,558, Cl. 525-454.000.
Graff, William A.; and Kohut, Jaroslaw, to General Electric Company. Frit glass composition. 4,359,536, Cl. 501-25.000.
Graham, Bruce L.: *See—*
Green, Todd C.; and Graham, Bruce L., 4,359,614, Cl. 200-5.00R.
Gralo Inc.: *See—*
Kroll, Arthur T.; and Sherman, Richard M., 4,359,189, Cl. 239-121.000.
Grant, Hendrie J.: *See—*
Gainer, Gordon C.; Luck, Russell M.; and Grant, Hendrie J., 4,359,394, Cl. 252-54.000.
Granzow, Albrecht H.; and Klingsberg, Erwin, to American Cyanamid Company. Non-pyrophoric nigrosine base. 4,359,577, Cl. 544-348.000.
Graphic Resources, Inc.: *See—*
Hattemer, James C., 4,359,358, Cl. 156-248.000.
Grassl, Hans-Peter; Kleinschmidt, Peter; Herbst, Heiner; and Pfleiderer, Hans-Jorg, to Siemens Aktiengesellschaft. Single reflex camera with optoelectronic distance meter. 4,359,274, Cl. 354-25.000.
Grasso, Charles P., to American Cyanamid Company. Process for the preparation of sulfur ylide intermediates of insecticidal pyrethroids. 4,359,580, Cl. 549-79.000.
Greco, Gerard B., to Loral Corporation. Visual instruction systems for printed circuit boards. 4,359,319, Cl. 434-224.000.
Green, Robert J.: *See—*
Czoch, Jerzy W.; Seagrove, Douglas J. W.; Green, Robert J.; and Morgan, Martin D., 4,359,152, Cl. 198-572.000.
Green, Todd C.; and Graham, Bruce L., to Illinois Tool Works Inc. Miniature two-level pushbutton switch. 4,359,614, Cl. 200-5.00R.

Greene, Edward S.; and Knight, Eric M., to Ford Motor Company. Method and apparatus for volumetric calibration of liquid flow sensor output signals. 4,358,947, Cl. 73-3.000.

Gregor, Karl; and Feldhaus, Karl, to Gewerkschaft Schalker Eisenhutte. Gas-collecting apparatus for coking installation. 4,359,364, Cl. 202-230.000.

Gregoria, Joseph R., Jr.: *See*—
Bernstein, William A.; Davis, John E.; and Gregoria, Joseph R., Jr., 4,359,571, Cl. 528-392.000.

Grey, Roger A.; and Pez, Guido P., to Allied Corporation. Hydrogenation of esters using alkali doped heterogeneous Group VIII transition metal catalysts. 4,359,404, Cl. 252-430.000.

Gringer, Donald. Blister pack for storage and display of elongated articles and the like. 4,359,158, Cl. 206-349.000.

Groom, James S.; and McIntyre, Robert W., to Package Machinery Company. Cartoning apparatus. 4,358,918, Cl. 53-74.000.

Gross, Ulrich, to U.S. Philips Corporation. Tracking device. 4,359,635, Cl. 250-201.000.

Groupement d'Interet Economique de Recherches et de Developpement PSA: *See*—
Xiberas, Andre, 4,359,038, Cl. 123-644.000.

GTE Products Corporation: *See*—
Morris, Merle E.; and Meade, Steven L., 4,359,665, Cl. 313-274.000.

Gubler, Hans; and Hintsch, Otto, to Sulzer Brothers Limited. Pattern mechanism for a warp knitting machine. 4,358,940, Cl. 66-207.000.

Guenthner, Russell W., to Honeywell Information Systems Inc. Clock pulse driver. 4,359,689, Cl. 328-72.000.

Guild, William H. Apparatus for selectively varying the longitudinal position of a skier on a pair of skis. 4,358,904, Cl. 36-117.000.

Guimond, Roy A.; Gulliksen, John E.; and Reed, Nanci W., to Koehler Manufacturing Company. Tubular positive electrode means for use in lead-acid storage batteries including shaped grid structure and self-registering grid complement means therefor. 4,359,509, Cl. 429-140.000.

Gulette, Ronald S.: *See*—
Gavagan, James A.; Gulette, Ronald S.; Petersen, Carl M., III; West, Frank; and Brennan, William E., 4,359,237, Cl. 280-806.000.

Gulf Oil Corporation: *See*—
Acharya, Vikramkumar; and Lakshmanan, Pallavoor R., 4,359,552, Cl. 525-193.000.
Lakshmanan, Pallavoor R., 4,359,440, Cl. 264-171.000.
Lakshmanan, Pallavoor R.; and Monachino, Benedict J., 4,359,556, Cl. 525-420.500.

Gulf & Western Manufacturing Company: *See*—
Garcia, Alexander, 4,358,880, Cl. 24-241.0PS.

Gulliksen, John E.: *See*—
Guimond, Roy A.; Gulliksen, John E.; and Reed, Nanci W., 4,359,509, Cl. 429-140.000.

Gurries, Raymond A.; and Stormon, Harry J., to Resonant Technology Company. Resonance aided earth-working equipment. 4,359,102, Cl. 172-40.000.

Gust, Arthur J.: *See*—
Abbagnaro, Louis A.; and Gust, Arthur J., 4,359,768, Cl. 369-55.000.

GX-Holding AG.: *See*—
Jaeger, Walter, 4,359,757, Cl. 358-49.000.

H. R. Electronics Company: *See*—
Levasseur, Joseph L., 4,359,147, Cl. 194-1.00N.

Haapala, Ray. Furrow opening, closing and soil firming device for seed planting. 4,359,104, Cl. 172-372.000.

Haas, Frederick W.; and Miloscia, William J., to Standard Oil Company, The. Monoolefin catalysts and method for the preparation thereof. 4,359,402, Cl. 252-429.00B.

Hada, Hiroshi; and Hirayama, Tsutomu, to Nippon Electric Co., Ltd. Pulse signal control circuits. 4,359,648, Cl. 307-254.000.

Haddock, Louis A.: *See*—
Messner, John S.; and Haddock, Louis A., 4,359,121, Cl. 180-69.00R.

Haefely, Willy: *See*—
Gerecke, Max; Haefely, Willy; Hunkeler, Walter; Kyburz, Emilio; Mohler, Hanns; Pieri, Lorenzo; and Polc, Petar, 4,359,420, Cl. 260-239.30B.

Hagen, Remon: *See*—
Fryberg, Mario; Hagen, Remon; and Scott, John G. V., 4,359,521, Cl. 430-505.000.

Hager, Frederick M. M.: *See*—
Liebermann, George; and Hager, Frederick M. M., 4,359,579, Cl. 549-14.000.

Hahn, Edward R., to Albany International Corp. Low density multilayer papermaking fabric. 4,359,069, Cl. 139-425.00A.

Hajnal, Miklos: *See*—
Balogh, Gyorgy; Hajnal, Miklos; Vajta, Laszlo; Lovanyi, Istvan; and Csenki, Laszlo, 4,359,725, Cl. 340-576.000.

Hall, John B.: *See*—
Schreck, Ronald P.; Light, Kenneth K.; Hall, John B.; Schmitt, Frederick L.; Vock, Manfred H.; Schreiber, William L.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,359,395, Cl. 252-174.110.

Hallford, Ben R., to Rockwell International Corporation. Balun coupled microwave frequency converter with single pair of diodes. 4,359,781, Cl. 455-327.000.

Hallford, Ben R., to Rockwell International Corporation. Microwave mixer with linking juxtaposed balun port. 4,359,782, Cl. 455-327.000.

Hamanaka, Ernest S., to Pfizer Inc. Bis-hydroxymethyl carbonate bridged antibacterial agents. 4,359,472, Cl. 424-271.000.

Hamato, Kikuko: *See*—
Nakamura, Masakazu; and Hamato, Kikuko, 4,359,455, Cl. 424-7.000.

Hamilton, Leslie A. Magnetic heading reference system and gun position system for military vehicles. 4,358,985, Cl. 89-41.00R.

Hammann, Ingeborg: *See*—
Stetter, Jog; Homeyer, Bernhard; and Hammann, Ingeborg, 4,359,469, Cl. 424-269.000.

Hammer, Jacob M., to RCA Corporation. Method of formation of a blazed grating. 4,359,373, Cl. 204-192.00E.

Hammond, Hilton H.: *See*—
Brane, Earl P.; Brane, Douglas K.; and Hammond, Hilton H., 4,359,384, Cl. 210-100.000.

Hammond, R. Philip: *See*—
Latter, Albert L.; Dooley, James L.; and Hammond, R. Philip, 4,359,118, Cl. 180-54.00B.

Hammond, Willis B.; Bigeleisen, Jacob; and Tuccio, Sam A., to Allied Corporation. Deuterium exchange between hydrofluorocarbons and amines. 4,359,368, Cl. 204-158.00R.

Hamprecht, Gerhard: *See*—
Ammermann, Eberhard; Zeeh, Bernd; Hamprecht, Gerhard; and Pommer, Ernst-Heinrich, 4,359,471, Cl. 424-269.000.

Hancor, Inc.: *See*—
Fouss, James L.; Parker, John J.; and Lytle, Donald A., 4,359,167, Cl. 220-72.000.

Handotai Kenkyu Shinkokai: *See*—
Nishizawa, Jun-ichi, 4,359,012, Cl. 118-59.000.

Hanna, Marie R.: *See*—
Belko, Robert P.; Boden, Richard M.; and Hanna, Marie R., 4,359,390, Cl. 252-8.600.

Hannig, Hubert; Krapp, Karl H.; and Molleken, Heinz, to Deutsche Fernsprecher Gesellschaft mbH Marburg. Telephone answering apparatus with solid state and dynamic tape storage. 4,359,607, Cl. 179-6.030.

Hanselman, Raymond B.; and Schreiber, Karl J., to Polaroid Corporation. Stripping sheet for use with diffusion transfer film unit. 4,359,518, Cl. 430-236.000.

Hansotte, Roger J.: *See*—
Karnofsky, George B.; and Hansotte, Roger J., 4,359,417, Cl. 260-123.500.

Haque, Sazzadul: *See*—
Hazra, Jayanta; and Haque, Sazzadul, 4,359,300, Cl. 407-114.000.

Hara, Kiyoshi: *See*—
Ito, Yoji; Inoue, Yozo; and Hara, Kiyoshi, 4,358,936, Cl. 62-229.000.

Hara, Yasuaki: *See*—
Takamizawa, Minoru; Okada, Fumio; Hara, Yasuaki; Aoki, Hsashi; and Inoue, Yoshio, 4,359,369, Cl. 204-159.130.

Haramoto, Yutaka; and Kikuchi, Mitsuru, to Victor Company of Japan, Ltd. Monaural signal to artificial stereo signals convertings and processing circuit for headphones. 4,359,605, Cl. 179-1.0GP.

Hard, Robert A.; and Prieto, Martin A., to Occidental Research Corporation. Process for making titanium oxide from titanium ore. 4,359,449, Cl. 423-82.000.

Harper-Love Adhesives Corporation: *See*—
Allen, Leon A., 4,359,341, Cl. 106-213.000.

Harper, Rex M.: *See*—
Morrison, Howard J.; and Harper, Rex M., 4,359,220, Cl. 273-1.00E.

Harper-Tervet, Jan; Tervet, Fred W.; and Humphrey, Marshall F., to United States of America, National Aeronautics and Space Administration. Mixed polyvalent-monovalent metal coating for carbon-graphite fibers. 4,359,503, Cl. 428-367.000.

Harris, Herbert M.; and Hill, Gerald N., to United States of America, Air Force. Apparatus for selectively jet etching a plastic encapsulating an article. 4,359,360, Cl. 156-345.000.

Harshaw Chemical Company, The: *See*—
Mitrofanov, Nicolas, 4,359,661, Cl. 313-93.000.

Hart, John S., to Allen-Bradley Company. Motor starter with optically coupled pushbutton station. 4,359,672, Cl. 318-16.000.

Hartel, Gunter, to Bosch & Pierburg System oHG. Constant-pressure carburetor. 4,359,433, Cl. 261-142.000.

Hartranft, Marc D.: *See*—
Buckendorf, Louis H.; and Hartranft, Marc D., 4,359,654, Cl. 307-571.000.

Harvey, Douglas J.; O'Connor, Neal E.; and Bronson, Joseph J., to General Motors Corporation. Tin-base body solder. 4,358,884, Cl. 29-402.180.

Harvey, Roy L.: *See*—
Galvin, Aaron A.; and Harvey, Roy L., 4,359,721, Cl. 340-525.000.

Hasegawa, Hiroshi, to Nippon Kogaku K.K. Single lens reflex camera system capable of TTL flash output control. 4,359,275, Cl. 354-33.000.

Hasegawa, Yoshio: *See*—
Yajima, Seishi; Okamura, Kiyohito; Hasegawa, Yoshio; and Yamamura, Takemi, 4,359,559, Cl. 525-475.000.

Hashimoto, Akihiko, to Olympus Optical Company, Ltd. Triaxial focal plane shutter. 4,359,278, Cl. 354-244.000.

Hashimoto, Shintaro: *See*—
Kunikane, Akihiko; Hashimoto, Shintaro; Teramura, Satoshi; Kobayashi, Kunihiro; and Iwase, Tetsuo, 4,359,730, Cl. 340-792.000.

Haskins, Steve W., to Northern Telecom, Inc. Modular switch. 4,359,611, Cl. 200-1.0TK.

Hattemer, James C., to Graphic Resources, Inc. In-store coupon and methods. 4,359,358, Cl. 156-248.000.

Hattori, Mitsutoshi: *See*—
Eguchi, Osamu; and Hattori, Mitsutoshi, 4,359,685, Cl. 324-208.000.

Haupt, Robert C.; and Kaiser, George E., to Allis-Chalmers Corporation. Adjustable power steering mechanism. 4,359,123, Cl. 180-159.000.

Have, Henrik. Method of extracting heat from manure sewage mud and other wet waste by combustion. 4,359,006, Cl. 110-346.000.

Haville, George D., to BEI Electronics, Inc. Frequency multiplying circuit for an optical encoder. 4,359,688, Cl. 328-20.000.

Havrevold, Sveinung: *See*—
Molaug, Ole; Kluge, Gunnar; and Havrevold, Sveinung, 4,359,014, Cl. 119-51.00R.

Hayakawa, Masahiro; and Hirano, Yutaka, to Fujitsu Limited. Semiconductor device. 4,359,754, Cl. 357-22.000.

Hayashi, Hiromi; Takahashi, Shigeru; and Kawamura, Kazuo, to Komori Printing Machinery Company, Ltd.; and Nihon Regulator Co., Ltd. Web infeed tension control system with dancer roll. 4,359,178, Cl. 226-25.000.

Hazeltine Corporation: *See*—
Frazita, Richard F., 4,359,740, Cl. 343-703.000.

Hazra, Jayanta; and Haque, Sazzadul, to General Electric Co. Cutting insert with improved chip control. 4,359,300, Cl. 407-114.000.

Head Wrightson Machine Co. Ltd., The: *See*—
Lawson, Kenneth T., 4,358,978, Cl. 83-364.000.

Heaton, Donald L., to Rockwell International Corporation. CVSD Multiple conference system. 4,359,603, Cl. 179-1.0CN.

Heemann, Volker: *See*—
Brummer, Ursula; and Heemann, Volker, 4,359,059, Cl. 131-276.000.

Heerde, Klaus: *See*—
Radtke, Gerd; Heerde, Klaus; Steiner, Hans-Joachim; and Mechelke, Klaus, 4,359,108, Cl. 173-15.000.

Hegar, Gert: *See*—
Lienhard, Paul; and Hegar, Gert, 4,359,418, Cl. 260-156.000.

Hegedus, Charles R.; and Clark, Kenneth G., to United States of America, Navy. Water-displacing paint. 4,359,543, Cl. 523-177.000.

Heikkila, Heikki O.; Melaja, Jaakko A.; Millner, Dan E. D.; and Virtanen, Jouko J., to Suomen Sokeri Osakeyhtio. Betaine recovery process. 4,359,430, Cl. 260-501.130.

Heimann, Bernd, to Heimann GmbH. Method of producing a double layer having a hetero-junction for a storage electrode of a camera device. 4,359,488, Cl. 427-76.000.

Heimann GmbH: *See*—
Heimann, Bernd, 4,359,488, Cl. 427-76.000.

Heine, Jochen W., to Stichting Rega V.Z.W. Method for the purification of interferon. 4,359,389, Cl. 210-644.000.

Heinz, Lothar; Sie, Tony; and Burror, Robert, to Siemens Medical Laboratories, Inc. Collimator assembly for an electron accelerator. 4,359,642, Cl. 378-150.000.

Heitman, Leroy M. Ground-working implement. 4,359,103, Cl. 172-197.000.

Helfrich, Robert C., Jr., to General Electric Company. Control system for refrigerator with through-the-door quick-chilling service. 4,358,932, Cl. 62-126.000.

Heller, Lawrence G.; Jones, Harry J.; Kotecha, Harish N.; and Soderman, Donald A., to International Business Machines Corporation. Process for making a dual implanted drain extension for bucket brigade device tetrode structure. 4,358,890, Cl. 29-571.000.

Hellige GmbH: *See*—
Leist, Helmut J.; and Pomorin, Karl-Heinz, 4,359,054, Cl. 128-635.000.

Hellmer, Ernest W., to Continental Group, Inc., The. Transfer device for applying labels to blow molds. 4,359,314, Cl. 425-503.000.

Hellums, James R.; and Terry, Michael B., to Mostek Corporation. Reference voltage circuit. 4,359,680, Cl. 323-313.000.

Helms, Charles R.; and Bell, Richard L., to Container Corporation of America. Container end closure arrangement. 4,359,169, Cl. 220-258.000.

Hemmer, Valentine J.: *See*—
Gallusser, David O.; Hemmer, Valentine J.; and Toombs, Gary C., 4,359,254, Cl. 339-89.00M.

Henderson, Joseph G.; Markham, Alan S.; and Neumyer, Richard D., to Western Electric Company, Inc. Methods of and systems for controlling the expansion of cellular plastic insulation in the manufacture of insulated conductors. 4,359,436, Cl. 264-40.600.

Henery, Vern A., to PPG Industries, Inc. Method of vapor deposition. 4,359,493, Cl. 427-255.100.

Henke, Klaus: *See*—
Holthausen, Dieter; Henke, Klaus; Stock, Hugo; and Tholen, Paul, 4,359,026, Cl. 123-306.000.

Hennion, Claude: *See*—
Lewiner, Jacques; and Hennion, Claude, 4,359,726, Cl. 340-666.000.

Henrick, Clive A.; and Staal, Gerardus B., to Zoecon Corporation. Substituted phenoxyethoxytetrahydropyran. 4,359,424, Cl. 549-416.000.

Henslin, William. Portable animal weighing cart. 4,359,099, Cl. 177-140.000.

Herbst, Heiner: *See*—
Grassl, Hans-Peter; Kleinschmidt, Peter; Herbst, Heiner; and Pfleiderer, Hans-Jorg, 4,359,274, Cl. 354-25.000.

Hewlett-Packard Company: *See*—
Winslow, Phillip D., 4,359,682, Cl. 324-58.00B.

Hidassy, Laszlo; and Netta, Louis A., to Thomas & Betts Corporation. Bundling tie applying kit. 4,359,070, Cl. 140-93.00A.

Higashio, Yasuhiko: *See*—
Deguchi, Takashi; Usui, Masahiro; and Higashio, Yasuhiko, 4,359,365, Cl. 203-55.000.

Higgins, Bobby L., to Camsco, Inc. Rotary chisel cutter. 4,358,975, Cl. 83-56.000.

Hill, Gerald N.: *See*—
Harris, Herbert M.; and Hill, Gerald N., 4,359,360, Cl. 156-345.000.

Hintsch, Otto: *See*—
Gubler, Hans; and Hintsch, Otto, 4,358,940, Cl. 66-207.000.

Hirano, Yutaka: *See*—
Hayakawa, Masahiro; and Hirano, Yutaka, 4,359,754, Cl. 357-22.000.

Hirayama, Tsutomu: *See*—
Hada, Hiroshi; and Hirayama, Tsutomu, 4,359,648, Cl. 307-254.000.

Hirota, Kazumi; Matsuoka, Kikuo; and Hori, Ichiro, to Toyo Seikan Kaisha, Limited. Method and apparatus of making a hermetically sealed container. 4,358,919, Cl. 53-453.000.

Hitachi Denshi Kabushiki Kaisha: *See*—
Suzuka, Kazuo, 4,359,770, Cl. 370-108.000.

Ho, Tse-Lok; and Liu, Shing-Hou, to SCM Corporation. Synthesis 2-alkyl cyclopentenolones. 4,359,586, Cl. 568-341.000.

Hoff, Raymond E.; Pullukat, Thomas J.; and Shida, Mitsuzo, to Chemplex Company. Polymerization catalyst and method. 4,359,403, Cl. 252-429.00B.

Hoffert, Franklin D.; Milligan, John D.; Marina, Jose M.; and Fernandez, Jose M., to Hydrocarbon Research, Inc. Fluidized bed reactor apparatus and related gasification system. 4,359,326, Cl. 48-62.00R.

Hoffman, Allan S., to World Health Organization. Method and composition containing MCA for female sterilization. 4,359,454, Cl. 424-5.000.

Hoffman, Paul R., to Exxon Research and Engineering Co. Floppy disc drive. 4,359,763, Cl. 360-99.000.

Hoffmann-La Roche Inc.: *See*—
Gerecke, Max; Haefely, Willy; Hunkeler, Walter; Kyburz, Emilio; Mohler, Hanns; Pieri, Lorenzo; and Polc, Petar, 4,359,420, Cl. 260-239.30B.

Hoggins, James T.; and Watts, Golden F., to Ashland Oil, Inc. Process for molding corrosion resistant fuel cell collecting plates. 4,359,438, Cl. 264-105.000.

Hoki, Tsuneo; and Matsuki, Yutaka, to Asahi-Dow Limited. Foaming synthetic resin compositions stabilized with certain higher ethers, esters or anhydrides. 4,359,539, Cl. 521-79.000.

Holman, John L. M.: *See*—
Sanborn, Duane F.; Holman, John L. M.; and Ware, Chester D., 4,359,086, Cl. 165-133.000.

Holmes, David D., to RCA Corporation. Television ghost cancellation system. 4,359,760, Cl. 358-167.000.

Holthausen, Dieter; Henke, Klaus; Stock, Hugo; and Tholen, Paul, to Klockner-Humboldt-Deutz AG. Internal combustion engine having rods for controlling twist pattern in combustion air supplied to valve chambers. 4,359,026, Cl. 123-306.000.

Homeyer, Bernhard: *See*—
Stetter, Jog; Homeyer, Bernhard; and Hammann, Ingeborg, 4,359,469, Cl. 424-269.000.

Honda Giken Kogyo Kabushiki Kaisha: *See*—
Aiba, Yasuaki, 4,359,126, Cl. 180-219.000.
Miyamaru, Yukio; Kudou, Masayuki; Nakazawa, Yoshihiro; and Kikuchi, Osamu, 4,359,716, Cl. 340-60.000.

Honegger, Heinz; and Bauer, Franz, to Honel Holding AG, Ltd. SA. Expansion joint member. 4,359,295, Cl. 404-68.000.

Honel Holding AG, Ltd. SA: *See*—
Honegger, Heinz; and Bauer, Franz, 4,359,295, Cl. 404-68.000.

Honeywell Inc.: *See*—
Buckendorf, Louis H.; and Hartranft, Marc D., 4,359,654, Cl. 307-571.000.
Chai, Thomas Y.; Reisch, Franz S.; and Wu, M. T., 4,359,720, Cl. 340-365.00C.
Kude, William B.; and Pearman, A. Noel J., 4,359,284, Cl. 374-37.000.
Mejia, Ezequiel; Minaki, Peter S.; and Weind, Walter D., 4,359,646, Cl. 307-116.000.
Reid, Dean F., 4,359,745, Cl. 346-23.000.
Schwarzer, Rudolf J., 4,359,719, Cl. 340-287.000.
Stauffer, Norman L., 4,359,636, Cl. 250-204.000.

Honeywell Information Systems Inc.: *See*—
Guenthner, Russell W., 4,359,689, Cl. 328-72.000.
Johnson, Robert B.; and Nibby, Chester M., Jr., 4,359,771, Cl. 371-13.000.

Hong, Chang H. Hydraulic hinge with door closing mechanism. 4,358,870, Cl. 16-53.000.

Hoover Universal, Inc.: *See*—
Brazeal, Earl H., 4,359,155, Cl. 198-409.000.

Hori, Ichiro: *See*—
Hirota, Kazumi; Matsuoka, Kikuo; and Hori, Ichiro, 4,358,919, Cl. 53-453.000.

Horiuchi, Takefumi; Kawate, Yoshio; Konishi, Masami; and Nagai, Nobuyuki, to Kobe Steel, Ltd. Method of monitoring the wear of refractory walls of a blast furnace and temperature probe used for the method. 4,358,953, Cl. 374-7.000.

Horkin, Philip R., to Martin Marietta Corporation. PIN Diode attenuator exhibiting reduced phase shift and capable of fast switching times. 4,359,699, Cl. 333-81.00A.

Hornbeck, William W. Gravity gauge for determination of shoulder bone angles in horses. 4,358,897, Cl. 33-343.000.

Horner, Joseph L.; and Ludman, Jacques E., to United States of America, Air Force. Holographic multiplexer/demultiplexer. 4,359,259, Cl. 350-3.700.

Horstman, Jerry L., to Conoco Inc. Method of removing and reinstalling bottom entering agitator seals. 4,358,885, Cl. 29-426.500.

Horstmann, Hans W., to U.S. Philips Corporation. Packing for a stack of rectangular, plate-shaped parts. 4,359,157, Cl. 206-328.000.

Horvath, Stephen J.: *See—*
Uecker, Richard P.; Horvath, Stephen J.; and Larkin, Francis C., 4,359,062, Cl. 133-2.000.

Horvay, Julius B., to General Electric Company. Household refrigerator defrost system. 4,358,933, Cl. 62-155.000.

Hosaka, Kimio, to Kabushiki Kaisha Marubishi Sogyo. Flexible sheet material with raised decorative pattern. 4,359,494, Cl. 428-15.000.

Hosaka, Masao; and Yanagawa, Nobuyuki, to Ricoh Company, Ltd. Lamp intensity control apparatus comprising preset means. 4,359,670, Cl. 315-307.000.

Howard, Kent A.; Mitchell, Howard L.; and Waghorne, Robert H., to Exxon Research and Engineering Co. Liquid salt extraction of aromatics from process feed streams. 4,359,596, Cl. 585-856.000.

Howe, Dennis G., to Eastman Kodak Company. Optical disc structure. 4,359,750, Cl. 346-135.100.

Howell, Stephen L., to Kimball International, Inc. Mixture generator for electronic organ. 4,358,981, Cl. 84-1.220.

Huber, Bernd; Schneider, Erich; and Fleischer, Helmut, to Robert Bosch GmbH. Position-sensitive alarm system. 4,359,717, Cl. 340-63.000.

Huchette, Michel: *See—*
Devos, Francis; Beuque, Patrick; and Huchette, Michel, 4,359,528, Cl. 435-43.000.

Huff, Martin, to Zahnradfabrik Friedrichshafen Aktiengesellschaft. Demountable clutch support for gear transmission. 4,359,145, Cl. 192-112.000.

Hughes Aircraft Company: *See—*
Fallon, Ray D.; and Stubbs, Richard D., 4,358,983, Cl. 89-1.806.
Thomson, Graham S.; and Wittmann, Alois, 4,359,201, Cl. 244-158.00R.

Hughes Tool Company: *See—*
Morris, Wilford V., 4,359,113, Cl. 175-337.000.
Truong-Cao, Hung-Viet, 4,359,109, Cl. 173-111.000.

Hull, Michael N.: *See—*
Turillon, Pierre P.; Hull, Michael N.; and Nordblom, George F., 4,358,892, Cl. 29-623.500.

Humphrey, Marshall F.: *See—*
Harper-Tervet, Jan; Tervet, Fred W.; and Humphrey, Marshall F., 4,359,503, Cl. 428-367.000.

Humphries, John M., to Marconi Company Limited, The. Method and apparatus for testing the braking efficiency of machines. 4,359,281, Cl. 356-373.000.

Hunkeler, Walter: *See—*
Gerecke, Max; Haefely, Willy; Hunkeler, Walter; Kyburz, Emilio; Mohler, Hanns; Pieri, Lorenzo; and Polc, Petar, 4,359,420, Cl. 260-239.30B.

Hunt, Charles R., to Kefco Precision Engineers (Peterlee) Ltd.; and Alpha Process Controls (West Yorkshire) Ltd. Pipe coupling. 4,359,066, Cl. 137-614.060.

Hwo, Charles C.; and Martone, John A., to Shell Oil Company. Synergistic co-nucleants for butene-1 polymer compositions. 4,359,544, Cl. 524-232.000.

Hydrocarbon Research, Inc.: *See—*
Chao, James C.; and Jenq, Cheng-Yih, 4,359,592, Cl. 568-916.000.
Hoffert, Franklin D.; Milligan, John D.; Marina, Jose M.; and Fernandez, Jose M., 4,359,326, Cl. 48-62.00R.
Kydd, Paul H., 4,359,353, Cl. 149-2.000.

Hynes, Richard K.; and Hynes, Robert W., to Barbour Welting Company, Inc. Wedge bonded shoe welting. 4,358,903, Cl. 36-78.000.

Hynes, Robert W.: *See—*
Hynes, Richard K.; and Hynes, Robert W., 4,358,903, Cl. 36-78.000.

Iantorno, James, to Sealectro Corporation. Female electrical connector for reduced pin grid applications. 4,359,253, Cl. 339-19.000.

Ichihara, Yoshihiro: *See—*
Tsuji, Masao; and Ichihara, Yoshihiro, 4,359,529, Cl. 435-52.000.

Ikunosuke, Fukuda; Pan, Jen-Csung; and Wang, Shiang-Fu. Table air pot for hot and cold water. 4,359,174, Cl. 222-131.000.

Ilco Unican Corp.: *See—*
Sagarian, John, 4,359,299, Cl. 407-55.000.

Illinois Tool Works Inc.: *See—*
Green, Todd C.; and Graham, Bruce L., 4,359,614, Cl. 200-5.00R.

Imaizumi, Yukio: *See—*
Aida, Kouichirou; Suzuki, Haruo; Kuwabara, Mitsuru; and Imaizumi, Yukio, 4,359,183, Cl. 229-52.00A.

Imamura, Akio, to Nippon Gakki Seizo K.K. Electronic musical instrument. 4,358,980, Cl. 84-1.190.

Immuno Aktiengesellschaft fur chemisch-medizinische Produkte: *See—*
Redl, Heinz; and Kriwetz, Gert, 4,359,049, Cl. 128-218.0PA.

Imperial Chemical Industries, Limited: *See—*
Barker, Ivan; and Marshall, Geoffrey, 4,359,441, Cl. 264-176.00F.

Ing. C. Olivetti & C., S.p.A.: *See—*
Pasini, Arnaldo; and Knirsch, Franco, 4,359,748, Cl. 346-76.0PH.
Simonotti, Lucio; and Sella, Mario, 4,359,630, Cl. 235-379.000.

Inoue, Eiichi: *See—*
Shimizu, Isamu; Shirai, Shigeru; and Inoue, Eiichi, 4,359,514, Cl. 430-65.000.

Inoue, Yoshio: *See—*
Takamizawa, Minoru; Okada, Fumio; Hara, Yasuaki; Aoki, Hsashi; and Inoue, Yoshio, 4,359,369, Cl. 204-159.130.

Inoue, Yozo: *See—*
Ito, Yoji; Inoue, Yozo; and Hara, Kiyoshi, 4,358,936, Cl. 62-229.000.

Institut Francais du Petrole: *See—*
Dawans, Francois; Durand, Jean-Pierre; and Binet, Daniel, 4,359,325, Cl. 44-62.000.

International Business Machines Corporation: *See—*
Bahr, Dietrich J.; and Briska, Marian, 4,359,484, Cl. 427-14.100.
Barnes, Johnny G.; and Waldo, Paul D., 4,359,286, Cl. 400-70.000.
Carothers, James A.; Economy, James; and Ouano, Augustus C., 4,359,520, Cl. 430-326.000.
Heller, Lawrence G.; Jones, Harry J.; Kotecha, Harish N.; and Soderman, Donald A., 4,358,890, Cl. 29-571.000.
Patel, Arvind M., 4,359,772, Cl. 371-39.000.
Toutant, Edward E., 4,359,288, Cl. 400-208.000.

International Flavors & Fragrances Inc.: *See—*
Belko, Robert P.; Boden, Richard M.; and Hanna, Marie R., 4,359,390, Cl. 252-8.600.
Boden, Richard M., 4,359,412, Cl. 252-522.00R.
Schreck, Ronald P.; Light, Kenneth K.; Hall, John B.; Schmitt, Frederick L.; Vock, Manfred H.; Schreiber, William L.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,359,395, Cl. 252-174.110.

International Harvester Co.: *See—*
Kirkham, Steven C., 4,359,130, Cl. 180-306.000.
Schroeder, William L., 4,358,965, Cl. 74-475.000.

International Nickel Company, Inc., The: *See—*
Turillon, Pierre P.; Hull, Michael N.; and Nordblom, George F., 4,358,892, Cl. 29-623.500.

International Telephone and Telegraph Corporation: *See—*
Levine, Arnold M., 4,359,779, Cl. 455-110.000.

Internationale Octrooi Maatschappij "Octropa" B.V.: *See—*
Smits, Johannes W.; and Timmermans, Franciscus A., 4,359,481, Cl. 426-533.000.

Inui, Takao, to Ishikawajima Harima Jukogyi; and Kawasaki Jukogyo Kabushiki Kaisha. Means for decreasing wave resistance on marine vessels. 4,359,010, Cl. 114-57.000.

Irvin Industries Inc.: *See—*
Gavagan, James A.; Gulette, Ronald S.; Petersen, Carl M., III; West, Frank; and Brennan, William E., 4,359,237, Cl. 280-806.000.

Ishii, Takeshi: *See—*
Ushio, Masaru; Morita, Tohru; and Ishii, Takeshi, 4,359,379, Cl. 208-120.000.

Ishikawa, Hisashi: *See—*
Terasawa, Masatoshi; Ishikawa, Hisashi; and Uemura, Takuo, 4,359,479, Cl. 426-3.000.

Ishikawa, Shozo: *See—*
Katagiri, Kazuharu; Watanabe, Katsunori; Ohta, Shigeto; Ishikawa, Shozo; and Kitahara, Makoto, 4,359,513, Cl. 430-58.000.
Katagiri, Kazuharu; Watanabe, Katsunori; Ohta, Shigeto; Ishikawa, Shozo; and Kitahara, Makoto, 4,359,515, Cl. 430-70.000.

Ishikawajima Harima Jukogyi: *See—*
Inui, Takao, 4,359,010, Cl. 114-57.000.

Israel Aircraft Industries, Ltd.: *See—*
Noy, Dan, 4,359,739, Cl. 343-112.00D.

Ito, Yoji; Inoue, Yozo; and Hara, Kiyoshi, to Nippondenso Co., Ltd. Electric control method and apparatus for air conditioners. 4,358,936, Cl. 62-229.000.

Itoh, Isamu: *See—*
Masuda, Takao; Fujiwara, Itsuo; Aotani, Yoshimasa; and Itoh, Isamu, 4,359,524, Cl. 430-522.000.

Itoh, Takayuki, to Asahi Kogaku Kogyo Kabushiki Kaisha. Variable power copying lens system. 4,359,269, Cl. 350-425.000.

Iwase, Tetsuo: *See—*
Kunikane, Akihiko; Hashimoto, Shintaro; Teramura, Satoshi; Kobayashi, Kunihiro; and Iwase, Tetsuo, 4,359,730, Cl. 340-792.000.

J & K Shepard Pty. Limited: *See—*
Shephard, Kevin E., 4,359,629, Cl. 235-78.00N.

Jabsen, Felix S., to Babcock & Wilcox Company, The. Steam generator tube supports. 4,359,088, Cl. 165-172.000.

Jackson, Barry N., to American Hospital Supply Corporation. Sound suppressor for fluid flow lines. 4,359,134, Cl. 181-230.000.

Jackson, Leigh F., to Westinghouse Electric Corp. Elevator system. 4,359,143, Cl. 187-52.00R.

Jackson, Nigel L.: *See—*
Gosling, Keith; Jackson, Nigel L.; Leon, Nicholas H.; Mulley, Victor J.; and Baldock, Michael J., 4,359,456, Cl. 424-68.000.

Jackson, W. Shaun; and Bohm, Leslie E. Motorcycle tank bag mounting arrangement. 4,359,233, Cl. 280-289.00A.

Jacobs, Peter; and Oeser, Heinz-Guenter, to BASF Aktiengesellschaft. Preparation of fluorinated anthranilic acid and anthranilonitrile. 4,359,428, Cl. 260-465.00E.

Jacobsen, Ole A., to Dansk Industri Syndikat A/S. Apparatus for separating castings from moulds of sand or similar material. 4,359,083, Cl. 164-404.000.

Jacobsen, Ralph E. Shower enclosure. 4,358,863, Cl. 4-607.000.

Jacobson, Don. Power driven bottle cap remover. 4,358,970, Cl. 81-3.200.

Jaeger, Walter, to GX-Holding AG. Method for the opto-electronic transmission of an image original. 4,359,757, Cl. 358-49.000.

Jagenberg Werke AG: *See—*
Thievessen, Karl; Weiss, Peter; and Schonmeier, Herbert, 4,359,195, Cl. 242-68.000.

Jakobsen, Kjell M., to PLM Aktiebolag. Reinforced container made of synthetic materials. 4,359,165, Cl. 215-1.00C.

Japan Atomic Energy Research Institute: *See*—
Kaetsu, Isao; and Yoshida, Masaru, 4,359,483, Cl. 427-2.000.
Jarosz, John M.; and Panas, William R., to S&C Electric Company. Fusible element for a current-limiting fuse having groups of spaced holes or notches therein. 4,359,708, Cl. 337-159.000.
Jarrett, Robert B.; and LoCascio, James J., to Motorola, Inc. Over voltage detection circuit for use in electronic ignition systems. 4,359,652, Cl. 307-350.000.
Jeanne, Francis J. P.: *See*—
Armand, Michel B.; and Jeanne, Francis J. P., 4,359,327, Cl. 55-16.000.
Jenbacher Werke Aktiengesellschaft: *See*—
Stangl, Walter, 4,359,037, Cl. 123-643.000.
Jenkins, Thomas E., to General Electric Company. Dishwasher tub and frame assembly. 4,359,250, Cl. 312-228.000.
Jenq, Cheng-Yih: *See*—
Chao, James C.; and Jenq, Cheng-Yih, 4,359,592, Cl. 568-916.000.
Jin An Industrial Co., Ltd.: *See*—
Lai-Chun, Liu, 4,359,491, Cl. 427-148.000.
Jinno, Michio. Asphalt recycling apparatus. 4,359,381, Cl. 209-3.000.
JLG Industries Inc.: *See*—
Merz, Ernest J.; and Walters, Charles W., 4,359,137, Cl. 182-2.000.
Joedicke, Ingo B., to GAF Corporation. Light colored roofing granules. 4,359,505, Cl. 428-404.000.
Johansson, Borje, to Alfa-Laval AB. Plate heat exchanger. 4,359,087, Cl. 165-167.000.
Johns, James E., to Bloom Engineering Co., Inc. Hot air ladle preheat station and method. 4,359,209, Cl. 266-44.000.
Johnson Controls, Inc.: *See*—
Matthews, Russell B., 4,359,315, Cl. 431-25.000.
Johnson, Edward C. Protractor. 4,358,898, Cl. 33-424.000.
Johnson, Edward E. Intake manifold fuel atomizing screen. 4,359,035, Cl. 123-593.000.
Johnson, Grady L. Powered hopper door. 4,359,176, Cl. 222-504.000.
Johnson, James N., Jr., to Strick Corporation. Vehicle for transporting compressible materials. 4,359,307, Cl. 414-525.00R.
Johnson & Johnson Products, Inc.: *See*—
Oczkowski, Boguslaw, 4,359,051, Cl. 128-283.000.
Johnson, Robert B.; and Nibby, Chester M., Jr., to Honeywell Information Systems Inc. Method and apparatus for testing and verifying the operation of error control apparatus within a memory. 4,359,771, Cl. 371-13.000.
Johnson, Wilfred V., to U.S. Fire Control Corporation. Automatic on-off fire sprinkler head. 4,359,098, Cl. 169-90.000.
Johnston, Christian W.: *See*—
Gould, Francis E.; and Johnston, Christian W., 4,359,558, Cl. 525-454.000.
Jones, Charles R.: *See*—
Schultz, Donald C.; and Jones, Charles R., 4,359,142, Cl. 184-11.00R.
Jones, Donald W.: *See*—
Miller, James D.; Lund, Worm; and Jones, Donald W., 4,359,114, Cl. 175-344.000.
Jones, Harry J.: *See*—
Heller, Lawrence G.; Jones, Harry J.; Kotecha, Harish N.; and Soderman, Donald A., 4,358,890, Cl. 29-571.000.
Jones & Laughlin Steel Corporation: *See*—
Gerding, Charles C.; Stoll, Joseph M.; and Majors, Harold L., 4,359,202, Cl. 249-109.000.
Jones, Lawrence T.: *See*—
Smith, Jay, III; Karr, Gerald S.; and Jones, Lawrence T., 4,359,222, Cl. 273-85.00G.
Jones, Paul D.: *See*—
De La Mare, Harold E.; and Jones, Paul D., 4,359,370, Cl. 204-159.150.
Jones, Paul H. Method and apparatus for natural gas and thermal energy production from aquifers. 4,359,092, Cl. 166-265.000.
Joseph, Joseph P.: *See*—
Nair, Vijay G.; Joseph, Joseph P.; Lewis, Arthur J.; and Bernstein, Seymour, 4,359,458, Cl. 424-180.000.
Joslyn, Carl R.: *See*—
Gallusser, David O.; Snyder, Gene L.; Brush, Robert W.; and Joslyn, Carl R., 4,359,256, Cl. 339-90.00R.
Jueschke, Alexander A.: *See*—
Baczek, Frank A.; Wojcik, Bruce C.; Jueschke, Alexander A.; Lewis, Daniel M.; Otto, Jack C.; and Tuttle, Lawrence L., 4,359,376, Cl. 204-242.000.
Jundt, Werner: *See*—
Seeger, Karl; Jundt, Werner; and Mezger, Manfred, 4,359,036, Cl. 123-609.000.
Jung, Ernst. Chain with toggle fastener. 4,358,924, Cl. 59-82.000.
Kabushiki Kaisha Marubishi Sogyo: *See*—
Hosaka, Kimio, 4,359,494, Cl. 428-15.000.
Kaetsu, Isao; and Yoshida, Masaru, to Japan Atomic Energy Research Institute. Process for producing a multi-layered slow release composite. 4,359,483, Cl. 427-2.000.
Kaiser, George E.: *See*—
Haupt, Robert C.; and Kaiser, George E., 4,359,123, Cl. 180-159.000.
Kaiser, Theodore, to Motorola, Inc. Retaining device. 4,358,874, Cl. 24-90.500.
Kako, Hiroyoshi: *See*—
Takahashi, Akira; Takase, Koyu; Kako, Hiroyoshi; and Kobayashi, Nobuo, 4,359,192, Cl. 239-692.000.
Kali-Chemie AG: *See*—
Bohm, Horst; Rudolph, Werner; and Massonne, Joachim, 4,359,371, Cl. 204-163.00R.
Kalinowski, Robert E.: *See*—
LeGrow, Gary E.; and Kalinowski, Robert E., 4,359,566, Cl. 528-16.000.
Kalker, Philip E.: *See*—
Ruben, Samuel; and Kalker, Philip E., 4,358,956, Cl. 73-301.000.
Kaltenbach & Voight GmbH & Co.: *See*—
Kummel, Dietmar; and Boeckh, Franz-Xaver, 4,359,316, Cl. 433-79.000.
Strohmaier, Ernst; Scheicher, Hans; and Eibofner, Eugen, 4,359,317, Cl. 433-85.000.
Kam, Lit Y.: *See*—
Olsson, Billy E.; and Kam, Lit Y., 4,359,252, Cl. 339-17.0CF.
Kammerman, Steven B., to New York Development Consultants, Ltd. Spring-assisted elongated mass over-center system. 4,359,119, Cl. 180-69.00R.
Kamoi, Koichi: *See*—
Nakajima, Tohru; and Kamoi, Koichi, 4,359,308, Cl. 414-719.000.
Kan, Peter T.: *See*—
Narayan, Thirumurti; Ramlow, Gerhard G.; and Kan, Peter T., 4,359,550, Cl. 524-871.000.
Kanai, Kiyoshi; and Mamura, Masashi, to Lotte Co., Ltd. Apparatus for wrapping a sheet article. 4,358,920, Cl. 53-516.000.
Kanbe, Junichiro: *See*—
Fukuda, Tadaji; Shirai, Shigeru; and Kanbe, Junichiro, 4,359,512, Cl. 430-57.000.
Kane, John J., to Pittsburgh & Conneaut Dock Company, The. Method of stimulating flow of particulates. 4,359,172, Cl. 222-1.000.
Kane, John L.; and Nadkarni, Vikas M., to Owens-Corning Fiberglas Corporation. Method for producing a lofted mat. 4,359,445, Cl. 264-518.000.
Kangol Magnet Limited: *See*—
Burke, David, 4,358,877, Cl. 24-230.00A.
Kaplan, Lester J.; McMillan, Moses W.; and Szmuszkovicz, Jacob, to Upjohn Company, The. Adjacently substituted cycloalkane-amide analgesics. 4,359,476, Cl. 424-274.000.
Kappe, Bernard W.: *See*—
MacFarland, James M.; and Kappe, Bernard W., 4,358,949, Cl. 73-23.000.
Karimov, Rakhmatzhan K.: *See*—
Abdurakhmanov, Mirkhasil; and Karimov, Rakhmatzhan K., 4,359,587, Cl. 568-402.000.
Karis, Arthur T., to Beloit Corporation. Continuous sheet collection and discharge system. 4,359,218, Cl. 271-188.000.
Karlicek, Robert F., Jr.: *See*—
Donnelly, Vincent M.; and Karlicek, Robert F., Jr., 4,359,485, Cl. 427-53.100.
Karnofsky, George B.; and Hansotte, Roger J., to Dravo Corporation. Process for extracting oleaginous seed materials particularly cottonseed with aqueous alcohol. 4,359,417, Cl. 260-123.500.
Karol, Frederick J.: *See*—
Fraser, William A.; Maraschin, Norma J.; Karol, Frederick J.; and Makai, Alexander J., 4,359,561, Cl. 526-88.000.
Karr, Gerald S.: *See*—
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Kashiwagi, Kenzo: *See*—
Akao, Mutsuo; and Kashiwagi, Kenzo, 4,359,499, Cl. 428-201.000.
Kaskinen, Pellervo: *See*—
Raivola, Pertti; Wikstroom, Bo; and Kaskinen, Pellervo, 4,359,678, Cl. 323-211.000.
Kass, John J.: *See*—
Coleman, David L.; and Kass, John J., 4,359,144, Cl. 188-77.00R.
Kassai, Ferenc: *See*—
Almasi, Istvan; Kassai, Ferenc; and Nyeste, Laszlo, 4,359,048, Cl. 128-205.120.
Kastan, B. Linn. Foot operated crank assembly. 4,358,967, Cl. 74-594.200.
Katagiri, Kazuharu; Watanabe, Katsunori; Ohta, Shigeto; Ishikawa, Shozo; and Kitahara, Makoto, to Copyer Co., Ltd.; and Canon Inc. Electrophotographic light-sensitive disazo compounds having diphenylacrylonitrile group. 4,359,513, Cl. 430-58.000.
Katagiri, Kazuharu; Watanabe, Katsunori; Ohta, Shigeto; Ishikawa, Shozo; and Kitahara, Makoto, to Copyer Co., Ltd.; and Canon Inc. Disazo electrophotographic light-sensitive media. 4,359,515, Cl. 430-70.000.
Katz, Daniel S.: *See*—
Sills, Ronald A.; Katz, Daniel S.; and Singh, Balwant, 4,359,575, Cl. 544-192.000.
Katzer, Hans: *See*—
Kratel, Gunter; and Katzer, Hans, 4,359,496, Cl. 428-75.000.
Kaufman, Robert J.: *See*—
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Kawamura, Kazuo: *See*—
Hayashi, Hiromi; Takahashi, Shigeru; and Kawamura, Kazuo, 4,359,178, Cl. 226-25.000.
Kawasaki Jukogyo Kabushiki Kaisha: *See*—
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Kawasaki, Syozo: *See*—
Nakamura, Kiyoshi; Nakanishi, Masae; Kawasaki, Syozo; Ochiai, Toshihiko; and Nishida, Katsutoshi, 4,359,022, Cl. 123-188.0AA.

Kawashima, Akira: *See—*
Mizutani, Taku; Yamagishi, Michio; Mizoue, Kazutoshi; Kawashima, Akira; Omura, Sadafumi; Otake, Noboru; and Seto, Haruo, 4,359,583, Cl. 549-343.000.

Kawate, Yoshio: *See—*
Horiuchi, Takefumi; Kawate, Yoshio; Konishi, Masami; and Nagai, Nobuyuki, 4,358,953, Cl. 374-7.000.

Kaye Instruments, Inc.: *See—*
Goldschmidt, Robert E.; Ku, Charles C.; and Townzen, David A., 4,359,746, Cl. 346-33.00R.
Goldschmidt, Robert E.; Ku, Charles C.; and Townzen, David A., 4,359,747, Cl. 346-33.0TP.
Goldschmidt, Robert E.; Ku, Charles C.; and Townzen, David A., 4,359,751, Cl. 346-136.000.

Kearney & Trecker Corporation: *See—*
Zankl, Frank; Sipek, Charles B.; and Cleek, Alvin L., 4,358,888, Cl. 29-568.000.

Keating, Terence J.; and Bond, Gordon T. Security gate. 4,358,910, Cl. 49-56.000.

Kefco Precision Engineers (Peterlee) Ltd.: *See—*
Hunt, Charles R., 4,359,066, Cl. 137-614.060.

Keim, Karl-Heinz: *See—*
Fremery, Max; Keim, Karl-Heinz; and Korff, Joachim, 4,359,591, Cl. 568-804.000.

Keller, Joseph R., to AMP Incorporated. Induction heating apparatus. 4,359,620, Cl. 219-10.730.

Kelm, Alvin; and Freiwald, Edward S., to Rexnord Inc. Emergency brake control for hoists. 4,359,208, Cl. 254-362.000.

Kelsey-Hayes Company: *See—*
Lizenby, Kevin J., 4,359,175, Cl. 222-199.000.

Kemptener Maschinenfabrik GmbH: *See—*
Muck, Siegfried, 4,359,007, Cl. 112-25.000.

Keuffel & Esser Company: *See—*
Popoff, Andrew, 4,359,279, Cl. 354-320.000.

Khoe, Giok D.: *See—*
Acket, Gerard A.; de Waard, Peter J.; Khoe, Giok D.; Wirtz, Gijsbrecht C.; and Rozzi, Tullio E., 4,359,776, Cl. 372-46.000.

Kiendl, Harro, to Friedrich Grohe Armaturenfabrik GmbH & Co. Mixing valve arrangement. 4,359,186, Cl. 236-12.00A.

Kikuchi, Mitsuru: *See—*
Haramoto, Yutaka; and Kikuchi, Mitsuru, 4,359,605, Cl. 179-1.0GP.

Kikuchi, Osamu: *See—*
Miyamaru, Yukio; Kudou, Masayuki; Nakazawa, Yoshihiro; and Kikuchi, Osamu, 4,359,716, Cl. 340-60.000.

Kim, Oh-Kil; and Fox, Robert B., to United States of America, Navy. Flexible semiconductive polymers. 4,359,411, Cl. 252-500.000.

Kimball International, Inc.: *See—*
Howell, Stephen L., 4,358,981, Cl. 84-1.220.

Kimble, Charles W. Fluid power control apparatus. 4,359,064, Cl. 137-269.000.

Kindl, George F.: *See—*
Michaud, Orean E.; and Kindl, George F., 4,358,895, Cl. 33-147.00L.

Kinoshita, Susumu: *See—*
Matsumoto, Hisayuki; Ushijima, Seiichi; Kinoshita, Susumu; and Suzuki, Masaki, 4,359,657, Cl. 310-156.000.

Kirkham, Steven C., to International Harvester Co. Hydraulic system for responsive splitting of engine power. 4,359,130, Cl. 180-306.000.

Kishimoto, Yoshio: *See—*
Nakagawa, Masami; Shimotsuma, Wataru; Kishimoto, Yoshio; and Sekine, Yoichi, 4,359,752, Cl. 346-140.00R.

Kistner, Kenneth. Drum holder. 4,359,241, Cl. 294-78.00R.

Kitahara, Makoto: *See—*
Katagiri, Kazuharu; Watanabe, Katsunori; Ohta, Shigeto; Ishikawa, Shozo; and Kitahara, Makoto, 4,359,513, Cl. 430-58.000.
Katagiri, Kazuharu; Watanabe, Katsunori; Ohta, Shigeto; Ishikawa, Shozo; and Kitahara, Makoto, 4,359,515, Cl. 430-70.000.

Kiwala, Jacob: *See—*
Schreck, Ronald P.; Light, Kenneth K.; Hall, John B.; Schmitt, Frederick L.; Vock, Manfred H.; Schreiber, William L.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,359,395, Cl. 252-174.110.

Kleinschmidt, Peter: *See—*
Grassl, Hans-Peter; Kleinschmidt, Peter; Herbst, Heiner; and Pfleiderer, Hans-Jorg, 4,359,274, Cl. 354-25.000.

Klingsberg, Erwin: *See—*
Granzow, Albrecht H.; and Klingsberg, Erwin, 4,359,577, Cl. 544-348.000.

Klockner-Humboldt-Deutz AG: *See—*
Holthausen, Dieter; Henke, Klaus; Stock, Hugo; and Tholen, Paul, 4,359,026, Cl. 123-306.000.

Kluge, Gunnar: *See—*
Molaug, Ole; Kluge, Gunnar; and Havrevold, Sveinung, 4,359,014, Cl. 119-51.00R.

Knight, Eric M.: *See—*
Greene, Edward S.; and Knight, Eric M., 4,358,947, Cl. 73-3.000.

Knirsch, Franco: *See—*
Pasini, Arnaldo; and Knirsch, Franco, 4,359,748, Cl. 346-76.0PH.

Kobayashi, Hiromitsu: *See—*
Maruyama, Eisuke; Kobayashi, Hiromitsu; Mitsuhashi, Masakazu; Takeuchi, Hiromichi; Futamura, Yoshiki; and Suzuki, Naohito, 4,359,074, Cl. 141-94.000.

Kobayashi, Ikuo: *See—*
Nagai, Takeshi; Yamamoto, Kazushi; and Kobayashi, Ikuo, 4,359,372, Cl. 204-192.00F.

Kobayashi, Kunihiro: *See—*
Kunikane, Akihiko; Hashimoto, Shintaro; Teramura, Satoshi; Kobayashi, Kunihiro; and Iwase, Tetsuo, 4,359,730, Cl. 340-792.000.

Kobayashi, Nobuo: *See—*
Takahashi, Akira; Takase, Koyu; Kako, Hiroyoshi; and Kobayashi, Nobuo, 4,359,192, Cl. 239-692.000.

Kobe Steel, Ltd.: *See—*
Horiuchi, Takefumi; Kawate, Yoshio; Konishi, Masami; and Nagai, Nobuyuki, 4,358,953, Cl. 374-7.000.

Kock, Manfred, to Akzo N.V. Production of a soybean meal. 4,359,480, Cl. 426-430.000.

Koehler, Gary W.: *See—*
Paterson, James A.; and Koehler, Gary W., 4,359,667, Cl. 313-348.000.

Koehler Manufacturing Company: *See—*
Guimond, Roy A.; Gulliksen, John E.; and Reed, Nanci W., 4,359,509, Cl. 429-140.000.

Koehm, Ronald E. Folding chair. 4,359,244, Cl. 297-16.000.

Kogure, Yamato. Method for manufacturing plastic products. 4,359,435, Cl. 264-40.500.

Kohl, Karl, to Sulzer Brothers Limited. Raschel warp knitting machine. 4,358,939, Cl. 66-203.000.

Kohut, Jaroslaw: *See—*
Graff, William A.; and Kohut, Jaroslaw, 4,359,536, Cl. 501-25.000.

Kollross, Gunter. Process and apparatus for automated manufacture of link sausages having casings formed of synthetic tubular material. 4,358,873, Cl. 17-33.000.

Komori Printing Machinery Company, Ltd.: *See—*
Hayashi, Hiromi; Takahashi, Shigeru; and Kawamura, Kazuo, 4,359,178, Cl. 226-25.000.

Kondo, Michikazu, to Nippon Electric Co., Ltd. Light quantity control apparatus. 4,359,268, Cl. 350-377.000.

Konishi, Masami: *See—*
Horiuchi, Takefumi; Kawate, Yoshio; Konishi, Masami; and Nagai, Nobuyuki, 4,358,953, Cl. 374-7.000.

Korenko, Michael K.: *See—*
Laidler, James J.; Borisch, Ronald R.; and Korenko, Michael K., 4,359,350, Cl. 148-12.300.
Merrick, Howard F.; and Korenko, Michael K., 4,359,349, Cl. 148-12.300.

Korff, Joachim: *See—*
Fremery, Max; Keim, Karl-Heinz; and Korff, Joachim, 4,359,591, Cl. 568-804.000.

Kornbichler, Heinz; Sartor, Bruno; and Rode, Klaus, to Uranit Uran-Isotopentrennungsgesellschaft mbH. Method and apparatus for production of fiber reinforced wound bodies. 4,359,356, Cl. 156-175.000.

Kortering, Randall L., to Caterpillar Tractor Co. Roadable grouser for track shoes. 4,359,248, Cl. 305-46.000.

Kotecha, Harish N.: *See—*
Heller, Lawrence G.; Jones, Harry J.; Kotecha, Harish N.; and Soderman, Donald A., 4,358,890, Cl. 29-571.000.

Kotwicki, Allan J., to General Motors Corporation. Altitude compensation vacuum pump control. 4,358,928, Cl. 60-397.000.

Kramer, Louis T.; Butler, Franklin H.; and Camino, Anthony V., to United States of America, Air Force. Soft landing gear. 4,359,199, Cl. 244-100.00R.

Kramer, Wolfgang; Buchel, Karl; Stetter, Jorg; Frohberger, Paul-Ernst; and Brandes, Wilhelm, to Bayer Aktiengesellschaft. Acylated triazolyl-γ-fluoropinacolyl derivatives and their use as fungicides. 4,359,470, Cl. 424-269.000.

Krapp, Karl H.: *See—*
Hannig, Hubert; Krapp, Karl H.; and Molleken, Heinz, 4,359,607, Cl. 179-6.030.

Kratel, Gunter; and Katzer, Hans, to Wacker-Chemie GmbH. Heat-insulating board and method for producing same. 4,359,496, Cl. 428-75.000.

Kraus, Heinz; and Bayer, Erich, to Dr. Johannes Heidenhain GmbH. Process for forming a high resolution recording medium. 4,359,519, Cl. 430-321.000.

Krause, Peter. Process and system for variable contrast color photographic imaging. 4,359,280, Cl. 355-37.000.

Kreitzer, Melvyn H., to Balcon Industries, Inc. Internal focusing telephoto lens. 4,359,272, Cl. 350-455.000.

Kretschmer, Frank F., Jr.: *See—*
Lewis, Bernard L.; and Kretschmer, Frank F., Jr., 4,359,735, Cl. 343-17.2PC.

Krimmel, Eberhard F.: *See—*
Patalong, Hubert; and Krimmel, Eberhard F., 4,359,486, Cl. 427-53.100.

Krivec, Bert, to Envirex Inc. Filter press plate transfer mechanism. 4,359,385, Cl. 210-230.000.

Kriwetz, Gert: *See—*
Redl, Heinz; and Kriwetz, Gert, 4,359,049, Cl. 128-218.0PA.

Krolak, Leo V., to Motorola, Inc. Resilient support for electronic component. 4,359,133, Cl. 181-172.000.

Kroll, Arthur T.; and Sherman, Richard M., to Gralo Inc. Automatic electrostatic centrifugal atomizer system. 4,359,189, Cl. 239-121.000.

Krude, Wernre, to Uni-Cardan Aktiengesellschaft. Wheel hub bearing arrangement. 4,359,128, Cl. 180-258.000.

Ku, Charles C.: *See—*
Goldschmidt, Robert E.; Ku, Charles C.; and Townzen, David A., 4,359,746, Cl. 346-33.00R.
Goldschmidt, Robert E.; Ku, Charles C.; and Townzen, David A., 4,359,747, Cl. 346-33.0TP.

Goldschmidt, Robert E.; Ku, Charles C.; and Townzen, David A., 4,359,751, Cl. 346-136.000.

Kude, William B.; and Pearman, A. Noel J., to Honeywell Inc. Method and apparatus for determining the Wobbe index of gaseous fuels. 4,359,284, Cl. 374-37.000.

Kudou, Masayuki: *See*—
Miyamaru, Yukio; Kudou, Masayuki; Nakazawa, Yoshihiro; and Kikuchi, Osamu, 4,359,716, Cl. 340-60.000.

Kulite Semiconductor Products, Inc.: *See*—
Mallon, Joseph R.; and Kurtz, Anthony D., 4,359,498, Cl. 428-156.000.

Kummel, Dietmar; and Boeckh, Franz-Xaver, to Kaltenbach & Voight GmbH & Co. Supply unit for the individual supply of dental handpieces. 4,359,316, Cl. 433-79.000.

Kummerlin, Nikolaus A.: *See*—
Kummerlin, Walter; and Kummerlin, Nikolaus A., 4,359,138, Cl. 182-214.000.

Kummerlin, Walter; and Kummerlin, Nikolaus A. Supporting device for ladders. 4,359,138, Cl. 182-214.000.

Kundt, Karl-Wilhelm: *See*—
Geverath, Wulf-Dieter; and Kundt, Karl-Wilhelm, 4,359,084, Cl. 165-12.000.

Kunikane, Akihiko; Hashimoto, Shintaro; Teramura, Satoshi; Kobayashi, Kunihiro; and Iwase, Tetsuo, to Sharp Kabushiki Kaisha. Alphanumeric display controlled by microprocessor. 4,359,730, Cl. 340-792.000.

Kuno, Akira: *See*—
Matsumoto, Muneaki; Numata, Koji; and Kuno, Akira, 4,358,886, Cl. 29-428.000.
Shinoda, Yoshio; Kuno, Akira; and Matsui, Takeshi, 4,359,125, Cl. 180-179.000.

Kuraray Co., Ltd.: *See*—
Tsuji, Masao; and Ichihara, Yoshihiro, 4,359,529, Cl. 435-52.000.

Kurtz, Anthony D.: *See*—
Mallon, Joseph R.; and Kurtz, Anthony D., 4,359,498, Cl. 428-156.000.

Kurtzman, Cletus P.; Bothast, Rodney J.; and VanCauwenberge, James E., to United States of America, Agriculture. Conversion of D-xylose to ethanol by the yeast *Pachysolen tannophilus*. 4,359,534, Cl. 435-161.000.

Kurzbuch, Werner, to Exxon Research & Engineering Co. Apparatus for cutting plastic film. 4,358,979, Cl. 83-658.000.

Kuwabara, Mitsuru: *See*—
Aida, Kouichirou; Suzuki, Haruo; Kuwabara, Mitsuru; and Imaizumi, Yukio, 4,359,183, Cl. 229-52.00A.

Kyburz, Emilio: *See*—
Gerecke, Max; Haefely, Willy; Hunkeler, Walter; Kyburz, Emilio; Mohler, Hanns; Pieri, Lorenzo; and Polc, Petar, 4,359,420, Cl. 260-239.30B.

Kydd, Paul H., to Hydrocarbon Research, Inc. Polypeptides as chemical tagging materials. 4,359,353, Cl. 149-2.000.

Kyte, Garrett J. Adjustable basket filler, blank and method of making. 4,359,076, Cl. 141-391.000.

L.P.E. S.r.l.: *See*—
Pantalone, Antonio, 4,358,915, Cl. 52-115.000.

Labana, Santokh S.; and Theodore, Ares N., to Ford Motor Company. Powder paint with epoxy and hydroxy copolymer and dicarboxylic acids. 4,359,554, Cl. 525-386.000.

Labofina, S.A.: *See*—
Bertrand, Jean-Noel Marie, 4,359,538, Cl. 521-79.000.

Laboratoire Roger Bellon: *See*—
Matsumoto, Jun-ichi; Takase, Yoshiyuki; and Nishimura, Yoshiro, 4,359,578, Cl. 544-362.000.

Lacasse, Maurice. Novel corrugated metal building structural unit. 4,358,916, Cl. 52-630.000.

Ladd Research Industries, Inc.: *See*—
Porter, John H., 4,358,960, Cl. 73-705.000.

Lai-Chun, Liu, to Jin An Industrial Co., Ltd. Process for the preparation of a thermal transferable twinkling pattern. 4,359,491, Cl. 427-148.000.

Laidler, James J.; Borisch, Ronald R.; and Korenko, Michael K., to United States of America, Energy. High post-irradiation ductility thermomechanical treatment for precipitation strengthened austenitic alloys. 4,359,350, Cl. 148-12.300.

Lakshmanan, Pallavoor R., to Gulf Oil Corporation. Coextrusion process for preparing a composite polymer film construction. 4,359,440, Cl. 264-171.000.

Lakshmanan, Pallavoor R.; and Monachino, Benedict J., to Gulf Oil Corporation. Thermoplastic polyamide hot melt adhesive composition. 4,359,556, Cl. 525-420.500.

Lakshmanan, Pallavoor R.: *See*—
Acharya, Vikramkumar; and Lakshmanan, Pallavoor R., 4,359,552, Cl. 525-193.000.

Lam, Wilhelmus J.; and De Vries, Luitzen, to Fokker-VFW B.V. Method and device for measuring the parameters of a damped, spring-supported mass. 4,358,959, Cl. 73-432.00R.

Lambe, John J.; McCarthy, Shaun L.; and Stadler, Henry L., to Ford Motor Company. Reflecting type light modulator. 4,359,698, Cl. 332-7.510.

Lambert, Leon W. Navigational aid. 4,359,628, Cl. 235-61.0NV.

Landolt, George R.; McHale, William D.; and Schoennagel, Hans J., to Mobil Oil Corporation. Catalyst regeneration procedure. 4,359,400, Cl. 252-415.000.

Lang, Donald D.: *See*—
Paquin, Patrick J.; and Lang, Donald D., 4,359,597, Cl. 174-34.000.

Langenfeld, Norbert: *See*—
Dieterich, Dieter; Blank, Heinz U.; Wolters, Erich; and Langenfeld, Norbert, 4,359,426, Cl. 260-453.0AR.

Langer, Peter; and Dominguez, Carlos, to Ford Motor Company. Coded failure indicator for an air bag system. 4,359,715, Cl. 340-52.00R.

Larkin, Francis C.: *See*—
Uecker, Richard P.; Horvath, Stephen J.; and Larkin, Francis C., 4,359,062, Cl. 133-2.000.

Larsson, Bjorn E.: *See*—
Merritt, Richard F.; and Larsson, Bjorn E., 4,359,564, Cl. 526-260.000.

Latter, Albert L.; Dooley, James L.; and Hammond, R. Philip, to R & D Associates. Engine system using liquid air and combustible fuel. 4,359,118, Cl. 180-54.00B.

Lauge, Raitis: *See*—
Cleminson, John H.; Bowman, Brian R.; and Lauge, Raitis, 4,359,442, Cl. 264-280.000.

Lawson, Kenneth T., to Head Wrightson Machine Co. Ltd., The. Trimming strip material. 4,358,978, Cl. 83-364.000.

Le Comte-Holland B.V.: *See*—
le Comte, Adolf, 4,359,437, Cl. 264-102.000.

le Comte, Adolf, to Le Comte-Holland B.V. Method and apparatus for producing a thin-walled article of synthetic resin, in particular a large-sized article. 4,359,437, Cl. 264-102.000.

Lee, Li-Chung: *See*—
Belentepe, Yilmaz C.; Lee, Li-Chung; and Wilder, Arthur H., 4,359,042, Cl. 126-443.000.

Lee, Ronald B., to Zenith Radio Corporation. Channel equalizer and method for cancelling ghosts. 4,359,778, Cl. 375-13.000.

LeGrow, Gary E.; and Kalinowski, Robert E., to Dow Corning Corporation. Silicone-epoxy coating compositions. 4,359,566, Cl. 528-16.000.

Lehmann, Rolf: *See*—
Spillmann, Werner, deceased; Spillmann, Emilie, heir; Scheffre nee Spillmann, Irene, heir; Spillmann, Rolf, heir; and Lehmann, Rolf, 4,358,993, Cl. 99-483.000.

Lehrer, William I., to Fairchild Camera & Instrument Corp. Method for LPCVD co-deposition of metal and silicon to form metal silicide. 4,359,490, Cl. 427-95.000.

Leist, Helmut J.; and Pomorin, Karl-Heinz, to Hellige GmbH. Retainer arrangement and method for applying a membrane to a physiological sensing unit. 4,359,054, Cl. 128-635.000.

Leon, Nicholas H.: *See*—
Gosling, Keith; Jackson, Nigel L.; Leon, Nicholas H.; Mulley, Victor J.; and Baldock, Michael J., 4,359,456, Cl. 424-68.000.

Leonard, Gerard E., to R. J. Reynolds Tobacco Company. Flexible sheet feeding mechanism. 4,359,216, Cl. 271-107.000.

Leonard, John C.: *See*—
Lootens, Charles W.; and Leonard, John C., 4,359,024, Cl. 123-198.00F.

LePage, James N., to W. R. Grace & Co. Single pump liquid chromatograph analytical system for amines. 4,359,323, Cl. 23-230.00M.

Lerch, Joachim: *See*—
Bohn, Josef; Lerch, Joachim; and Troltsch, Franz, 4,359,705, Cl. 335-213.000.

Levasseur, Joseph L., to H. R. Electronics Company. Means to control vending functions. 4,359,147, Cl. 194-1.00N.

Levens, Joseph A., to Nipak, Inc. Sweep ell production method. 4,359,446, Cl. 264-568.000.

Lever Brothers Company: *See*—
Gosling, Keith; Jackson, Nigel L.; Leon, Nicholas H.; Mulley, Victor J.; and Baldock, Michael J., 4,359,456, Cl. 424-68.000.

Levesque, Daniel R.: *See*—
Parker, Roy B.; and Levesque, Daniel R., 4,359,132, Cl. 181-169.000.

Levi, Mark W., to United States of America, Air Force. Fiber optic switching device. 4,359,261, Cl. 350-96.140.

Levine, Arnold M., to International Telephone and Telegraph Corporation. FM Transmitter with frequency ramp phase and amplitude correction means. 4,359,779, Cl. 455-110.000.

Levis, Robert W., to Air Products and Chemicals, Inc. Protective atmosphere process for annealing and or spheroidizing ferrous metals. 4,359,351, Cl. 148-16.700.

Levit, Nadezhda M.: *See*—
Rusanov, Alexander I.; Gavrilov, Vitaly P.; Yarmashev, Jury N.; Arbuzov, Pavel M.; and Levit, Nadezhda M., 4,359,058, Cl. 130-27.00Z.

Lewiner, Jacques; and Hennion, Claude. Composite sheets constituting electromechanical transducers and transducers equipped with such sheets. 4,359,726, Cl. 340-666.000.

Lewis, Arthur J.: *See*—
Nair, Vijay G.; Joseph, Joseph P.; Lewis, Arthur J.; and Bernstein, Seymour, 4,359,458, Cl. 424-180.000.

Lewis, Bernard L.; and Kretschmer, Frank F., Jr., to United States of America, Navy. Multi-sampling-channel pulse compressor. 4,359,735, Cl. 343-17.2PC.

Lewis, Bernard L., to United States of America, Navy. Frequency-phase coding device. 4,359,736, Cl. 343-17.2PC.

Lewis, Bernard L., to United States of America, Navy. Clutter and multipath suppressing sidelobe canceller antenna system. 4,359,738, Cl. 343-100.0LE.

Lewis, Daniel M.: *See*—
Baczek, Frank A.; Wojcik, Bruce C.; Jueschke, Alexander A.; Lewis, Daniel M.; Otto, Jack C.; and Tuttle, Lawrence L., 4,359,376, Cl. 204-242.000.

Lewis, Duane H., to Continental Plastics, Inc. Container cover locking assembly. 4,359,171, Cl. 220-307.000.

Ley, Anthony J., to Enertec. Electronic watt-hour meter. 4,359,684, Cl. 324-142.000.

Li, Norman N.: *See—*
Salathiel, William M.; Muecke, Thomas W.; Cooke, Claude E., Jr.; and Li, Norman N., 4,359,391, Cl. 252-8.55C.

Licentia Patent-Verwaltungs-G.m.b.H.: *See—*
Marschall, Peter; Petermann, Klaus; Schlosser, Ewald; Vollmer, Hans-Peter; and Wolk, Claus, 4,359,775, Cl. 372-45.000.
Schiekel, Manfred, 4,359,749, Cl. 346-135.100.

Liebermann, George; and Hager, Frederick M. M., to Uniroyal, Ltd. Synthesis of intermediate for the manufacture of 5,6-dihydro-2-methyl-N-phenyl-1,4-oxathin-3-carboxamide. 4,359,579, Cl. 549-14.000.

Lienhard, Paul; and Hegar, Gert, to Ciba-Geigy Corporation. Amine salts of azo dyestuffs of the pyridone series. 4,359,418, Cl. 260-156.000.

Light, Kenneth K.: *See—*
Schreck, Ronald P.; Light, Kenneth K.; Hall, John B.; Schmitt, Frederick L.; Vock, Manfred H.; Schreiber, William L.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,359,395, Cl. 252-174.110.

Lin, Stephen Y., to American Can Company. Dye compositions and method of using same. 4,359,321, Cl. 8-528.000.

Linder, Ernst: *See—*
Maurer, Helmut; Rieger, Franz; Muller, Klaus; and Linder, Ernst, 4,358,952, Cl. 73-35.000.

Liu, Shing-Hou: *See—*
Ho, Tse-Lok; and Liu, Shing-Hou, 4,359,586, Cl. 568-341.000.

Lizenby, Kevin J., to Kelsey-Hayes Company. Adjustable vibrating powder dispensing assembly. 4,359,175, Cl. 222-199.000.

Llama Gabilondo y. Cia. S.A.: *See—*
Wilhelm, Gary, 4,358,987, Cl. 89-196.000.

LoCascio, James J.: *See—*
Jarrett, Robert B.; and LoCascio, James J., 4,359,652, Cl. 307-350.000.

Lockwood, Lawrence B.; Wells, Michael; and Charmasson, Henri J. A., to Lockwood, Lawrence B. Self-service terminal. 4,359,631, Cl. 235-381.000.

Loepfe Brothers Limited: *See—*
Loepfe, Erich; Weidmann, Erich; and Schumperli, Walter, 4,359,068, Cl. 139-370.200.

Loepfe, Erich; Weidmann, Erich; and Schumperli, Walter, to Loepfe Brothers Limited. Electronic weft stop motion on a gripper shuttle weaving machine. 4,359,068, Cl. 139-370.200.

Loge, Olaf: *See—*
Vorbruggen, Helmut; Schwarz, Norbert; Loge, Olaf; and Elger, Walter, 4,359,467, Cl. 424-263.000.

Lohmann, Dieter: *See—*
d'Hondt, Christian; Lohmann, Dieter; and Neuenschwander, Ernst, 4,359,555, Cl. 525-358.000.

Lootens, Charles W.; and Leonard, John C. Engine attachment. 4,359,024, Cl. 123-198.00F.

Lopes, Eugene F.: *See—*
Caponigro, Dennis A.; and Lopes, Eugene F., 4,359,502, Cl. 428-251.000.

Lopez, Ruben M.: *See—*
Rohlf, Donna; and Lopez, Ruben M., 4,359,266, Cl. 350-307.000.

Lopinski, Edward J.; and Parmer, Kenneth R., to AMP Incorporated. Modular connector for flat flexible cable. 4,359,257, Cl. 339-99.00R.

Loral Corporation: *See—*
Greco, Gerard B., 4,359,319, Cl. 434-224.000.

Losert, Gehard K.; and Webb, William M., to General Electric Company. Apparatus to preserve vegetables. 4,358,935, Cl. 62-188.000.

Lothrop, John W.: *See—*
Erlichman, Irving; and Lothrop, John W., 4,359,149, Cl. 198-347.000.

Lotte Co., Ltd.: *See—*
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Terasawa, Masatoshi; Ishikawa, Hisashi; and Uemura, Takuo, 4,359,479, Cl. 426-3.000.

Lougheed, Victor R.; and McGrew, John W., to Teledyne Isotopes. Temperature measuring method and apparatus. 4,358,957, Cl. 374-134.000.

Lovanyi, Istvan: *See—*
Balogh, Gyorgy; Hajnal, Miklos; Vajta, Laszlo; Lovanyi, Istvan; and Csenki, Laszlo, 4,359,725, Cl. 340-576.000.

Lowman, Steven R.: *See—*
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Luck, Russell M.: *See—*
Gainer, Gordon C.; Luck, Russell M.; and Grant, Hendrie J., 4,359,394, Cl. 252-54.000.

Ludman, Jacques E.: *See—*
Horner, Joseph L.; and Ludman, Jacques E., 4,359,259, Cl. 350-3.700.

Luke, Mike A., to Baker International Corporation. Anchoring mechanism for well packer. 4,359,090, Cl. 166-217.000.

Lum, Victor. Multicolor pen. 4,359,291, Cl. 401-33.000.

Lund, Worm: *See—*
Miller, James D.; Lund, Worm; and Jones, Donald W., 4,359,114, Cl. 175-344.000.

Luther, Erich: *See—*
Mayer, Karl; Luther, Erich; and Maelzer, Martin, 4,359,162, Cl. 211-41.000.

Lutz, Stephen S.: *See—*
Franks, Larry A.; and Lutz, Stephen S., 4,359,641, Cl. 250-486.100.

Luy, William R., to Eaton Corporation. Annular resistor with zig-zag layer pattern for resistance elements. 4,359,710, Cl. 338-51.000.

Lyles, Christopher J., to Amtel, Inc. Boat mooring system for a platform structure. 4,359,011, Cl. 114-230.000.

Lytle, Donald A.: *See—*
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M.A.N. Maschinenfabrik Augsburg-Nurnberg A.G.: *See—*
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M.A.N. Maschinenfabrik Augsburg-Nurnburg A.G.: *See—*
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M.A.N.-Roland Druckmaschinen Aktiengesellschaft: *See—*
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M. S. Willett, Inc.: *See—*
Gerben, Ralph D.; and Walters, Harry J., 4,359,153, Cl. 198-621.000.

Ma, Ki B.: *See—*
Zukotynski, Stefan; Ma, Ki B.; Perz, John; Szadkowski, Andrzej; and Yacobi, Ben-Gur, 4,359,367, Cl. 204-37.00R.

Maccari, Arthur, Sr. Mud flap brackets for trucks, tractors, trailers and the like. 4,359,232, Cl. 280-154.50R.

MacFarland, James M.; and Kappe, Bernard W., to United States of America, Air Force. Argon purity tester. 4,358,949, Cl. 73-23.000.

Machlan, G. Richard: *See—*
Shah, Hashmuk G.; and Machlan, G. Richard, 4,359,444, Cl. 264-518.000.

Maeland, Arnulf J., to Allied Corporation. Hydride of beryllium-based intermetallic compound. 4,359,396, Cl. 252-188.250.

Maelzer, Martin: *See—*
Mayer, Karl; Luther, Erich; and Maelzer, Martin, 4,359,162, Cl. 211-41.000.

Magder, Jules; and Reich, Murray H., to Princeton Chemical Research, Inc. Paper-like butene-1 polymer compositions. 4,359,497, Cl. 428-141.000.

Magee, Walter L., Jr.; and Bayer, Arthur C., to Stauffer Chemical Company. Preparation of arylphosphinic acids. 4,359,431, Cl. 260-502.40R.

Magnetics International, Inc.: *See—*
Morgan, Donald G., 4,359,382, Cl. 209-223.00A.

Magyar, Joseph J., to General Motors Corporation. Seat belt buckle. 4,358,879, Cl. 24-230.00A.

Mahony, John E., to General Electric Company. Method and means for minimizing distortion in television display. 4,359,728, Cl. 340-747.000.

Mahrus, Duraid; and Daxer, Georg, to Metal Leve S/A Industria e Comercio. Method for manufacturing a piston with a separate skirt. 4,358,881, Cl. 29-156.50R.

Maiorella, Brian L.: *See—*
Wilke, Charles R.; Maiorella, Brian L.; Blanch, Harvey W.; and Cysewski, Gerald R., 4,359,533, Cl. 435-161.000.

Majors, Harold L.: *See—*
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Makai, Alexander J.: *See—*
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Makowski, Henry S.: *See—*
Agarwal, Pawan K.; and Makowski, Henry S., 4,359,547, Cl. 524-504.000.

Mallon, Joseph R.; and Kurtz, Anthony D., to Kulite Semiconductor Products, Inc. Transducer structure employing vertically walled diaphragms with quasi rectangular active areas. 4,359,498, Cl. 428-156.000.

Mamura, Masashi: *See—*
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Mankey, Harry S., to Standard Manufacturing Company, Incorporated. Ground pressure reducing undercarriage unit. 4,359,116, Cl. 180-6.480.

Manzella, Giovanni. Apparatus for measuring oxygen consumption and the exchange of other breathing gases. 4,359,057, Cl. 128-718.000.

Mapco, Inc.: *See—*
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Maraschin, Norma J.: *See—*
Fraser, William A.; Maraschin, Norma J.; Karol, Frederick J.; and Makai, Alexander J., 4,359,561, Cl. 526-88.000.

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Gerard, Roger E. J., 4,359,696, Cl. 330-151.000.
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Marina, Jose M.: *See—*
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Marquis, Robert P.: *See—*
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Marschall, Peter; Petermann, Klaus; Schlosser, Ewald; Vollmer, Hans-Peter; and Wolk, Claus, to Licentia Patent-Verwaltungs-G.m.b.H. Semiconductor laser. 4,359,775, Cl. 372-45.000.
Marshall, Geoffrey: *See*—
Barker, Ivan; and Marshall, Geoffrey, 4,359,441, Cl. 264-176.00F.
Marshall, Richard C., to Xerox Corporation. Maintaining Paschen breakdown voltage in electrographic printing. 4,359,753, Cl. 346-153.100.
Martenson, Donald S. Free standing stove. 4,359,040, Cl. 126-77.000.
Martin Engineering Company: *See*—
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Martin, Hardison G.: *See*—
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Ponto, Robert A.; and Martin, Hardison G., 4,359,602, Cl. 179-1.00B.
Martin Marietta Corporation: *See*—
Horkin, Philip R., 4,359,699, Cl. 333-81.00A.
Martin, Philip N., to Mapco, Inc. Method of generating a seismic signal employing a water piston. 4,359,131, Cl. 181-116.000.
Martone, John A.: *See*—
Hwo, Charles C.; and Martone, John A., 4,359,544, Cl. 524-232.000.
Maruyama, Eisuke; Kobayashi, Hiromitsu; Mitsuhashi, Masakazu; Takeuchi, Hiromichi; Futamura, Yoshiki; and Suzuki, Naohito, to Tokico Ltd.; and Tokico Yuki Ltd. Fuel supplying apparatus. 4,359,074, Cl. 141-94.000.
Marvel, Carl S.; and Sankaran, Venkatesa, to United States of America, Air Force. Polyaromatic amides containing 1,3-butadiene units. 4,359,568, Cl. 528-183.000.
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Master Specialties Corporation: *See*—
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Mastrangelo, Sebastian V. R., to Du Pont de Nemours, E. I., and Company. Insulative composition for forming polymeric electric current regulating junctions. 4,359,414, Cl. 523-200.000.
Masuda, Takao; Fujiwara, Itsuo; Aotani, Yoshimasa; and Itoh, Isamu, to Fuji Photo Film Co., Ltd. Heat developable photosensitive material. 4,359,524, Cl. 430-522.000.
Mathias, Eckart; and Shimanski, Michael A., to W. R. Grace & Co. Mercaptoacetonitrile synthesis. 4,359,429, Cl. 260-465.100.
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Matsumoto, Jun-ichi; Takase, Yoshiyuki; and Nishimura, Yoshiro, to Dainippon Pharmaceutical Co., Ltd.; and Laboratoire Roger Bellon. Naphthyridine derivatives and salts thereof useful as antibacterial agents. 4,359,578, Cl. 544-362.000.
Matsumoto, Muneaki; Numata, Koji; and Kuno, Akira, to Nippon Soken, Inc. Method of mounting an azimuth indicator in an automobile. 4,358,886, Cl. 29-428.000.
Matsumura, Akira, to Nissan Motor Company, Limited. Communications system for automotive vehicles. 4,359,712, Cl. 340-23.000.
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Matthews, Russell B., to Johnson Controls, Inc. Apparatus for fuel ignition system including complete cycling of flame relay prior to trial for ignition. 4,359,315, Cl. 431-25.000.
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Matula, Jerry: *See*—
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Maurer, Helmut; Rieger, Franz; Muller, Klaus; and Linder, Ernst, to Robert Bosch GmbH. Optical engine knock sensor. 4,358,952, Cl. 73-35.000.
Maxwell, Donald. Power dozer. 4,358,905, Cl. 37-100.000.
May, Claude H. Internal combustion engine. 4,359,017, Cl. 123-69.00V.
Mayer, Karl; Luther, Erich; and Maelzer, Martin, to Luther, Erich; and Maelzer, Martin. Device for stacking board-staped articles. 4,359,162, Cl. 211-41.000.
Maytag Company, The: *See*—
Davis, Gordon J., 4,359,146, Cl. 192-136.000.
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McBride, Thomas R.; and Richey, Joseph B., to Technicare Corporation. Bias lighting in a radiographic apparatus and method. 4,359,759, Cl. 358-111.000.
McCarthy, Shaun L.: *See*—
Lambe, John J.; McCarthy, Shaun L.; and Stadler, Henry L., 4,359,698, Cl. 332-7.510.
McClellan, Thomas A., to Sperry Corporation. Juice container and stirrer. 4,359,283, Cl. 366-247.000.
McCreery, Robert B. Severe duty hydraulic cylinder with continuously effective locking device. 4,359,206, Cl. 254-93.00R.
McEntire, Edward E.; and Dominquez, Richard J. G., to Texaco Inc. Method for making rim elastomers using a catalyst system which is a polymer containing tertiary amine moieties. 4,359,540, Cl. 521-129.000.
McGraw-Edison Company: *See*—
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Meighan, Richard M.; and Cash, Harry R., Jr., to Eltra Corporation. Lead-acid storage battery. 4,359,508, Cl. 429-52.000.
Mejia, Ezequiel; Minaki, Peter S.; and Weind, Walter D., to Honeywell Inc. Intrusion detecting switch. 4,359,646, Cl. 307-116.000.
Melaja, Jaakko A.: *See*—
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Merger, Franz; and Nestler, Gerhard, to BASF Aktiengesellschaft. Preparation of p-substituted, aromatic amines. 4,359,584, Cl. 564-393.000.
Merrick, Howard F.; and Korenko, Michael K., to United States of America, Energy. Method for heat treating iron-nickel-chromium alloy. 4,359,349, Cl. 148-12.300.
Merritt, Richard F.; and Larsson, Bjorn E., to Rohm & Haas Co. Addition polymer of oligomeric polyesters of acrylic acid. 4,359,564, Cl. 526-260.000.
Merz, Ernest J.; and Walters, Charles W., to JLG Industries Inc. Safe-load indicator for aerial lift platform apparatus. 4,359,137, Cl. 182-2.000.
Messner, John S.; and Haddock, Louis A., to Clark Equipment Company. Lift truck hood mechanism and method for operation thereof. 4,359,121, Cl. 180-69.00R.
Metal Leve S/A Industria e Comercio: *See*—
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Meyerhoefer, Carl E.; and Meyerhoefer, Carl H., to Black & Decker Inc. Switch and means to prevent unauthorized operation thereof. 4,359,615, Cl. 200-42.00R.
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Michaels, Nathaniel E., to Fiber Glass Tooling & Specialties. Venting arrangement for matched molds and method. 4,359,443, Cl. 264-328.200.
Michaud, Orean E.; and Kindl, George F., to Colt Industries Operating Corp. Continuous contact gage for strip rolling process having floating mechanism. 4,358,895, Cl. 33-147.00L.
Michel, Horst-Werner. Method and apparatus for hardening mold parts made of sand for making metal castings. 4,359,082, Cl. 164-16.000.
Micro-Plate, Inc.: *See*—
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Mihara, Shin-ichi, to Olympus Optical Co., Ltd. Compact photographic camera lens system having a short overall length. 4,359,271, Cl. 350-432.000.
Milberger, Ernest C.: *See*—
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Miller, Bernard J. Power transfer device idler gear. 4,358,968, Cl. 74-713.000.
Miller, James D.; Lund, Worm; and Jones, Donald W., to Robbins Machine, Inc. Raise drill bit inboard cutter assembly. 4,359,114, Cl. 175-344.000.
Miller, Luitpold, to Thyssen Industrie AG. Brake for rail vehicles. 4,359,247, Cl. 303-24.00R.
Miller, Nick M., III, to Firestone Tire & Rubber Company, The. Electrical control system and method for a tire building machine server. 4,359,675, Cl. 318-603.000.
Miller, Roy W.; and Mutyala, Bhaskara R., to Pullman Incorporated. Railway car center filler. 4,359,003, Cl. 105-420.000.
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Millner, Dan E. D.: *See*—
Heikkila, Heikki O.; Melaja, Jaakko A.; Millner, Dan E. D.; and Virtanen, Jouko J., 4,359,430, Cl. 260-501.130.
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Mimura, Katsura; and Tsugawa, Kazuo, to Mitsubishi Denki Kabushiki Kaisha. Magnetizing system. 4,359,765, Cl. 361-147.000.
Minaki, Peter S.: *See*—
Mejia, Ezequiel; Minaki, Peter S.; and Weind, Walter D., 4,359,646, Cl. 307-116.000.
Minnesota Mining and Manufacturing Company: *See*—
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Mitchell, Howard L.: *See*—
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Mitrofanov, Nicolas, to Harshaw Chemical Company, The. Geiger-Mueller tube with tungsten liner. 4,359,661, Cl. 313-93.000.
Mitsubishi Denki Kabushiki Kaisha: *See*—
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Okamoto, Kouichi; Sakuyama, Masaki; Furukado, Shoji; and Oishi, Norio, 4,358,937, Cl. 62-505.000.
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Mitsubishi Kasei Kogyo Kabushiki Kaisha: *See*—
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Mitsuhashi, Masakazu: *See*—
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Mittelstadt, Roy A., to General Motors Corporation. Fifth wheel assembly for tractor-trailer combination. 4,359,234, Cl. 280-438.00R.
Miyamaru, Yukio; Kudou, Masayuki; Nakazawa, Yoshihiro; and Kikuchi, Osamu, to Honda Giken Kogyo Kabushiki Kaisha. Method and apparatus for sensing air pressure in pneumatic suspension units for vehicles. 4,359,716, Cl. 340-60.000.
Miyashita, Yoshinori: *See*—
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Mizutani, Taku; Yamagishi, Michio; Mizoue, Kazutoshi; Kawashima, Akira; Omura, Sadafumi; Otake, Noboru; and Seto, Haruo, to Taisho Pharmaceutical Co., Ltd. Antibiotics TM-531 B and TM-531 C. 4,359,583, Cl. 549-343.000.
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Mohler, Hanns: *See*—
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Molleken, Heinz: *See*—
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Monachino, Benedict J.: *See*—
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Monley, Robert E., to Westinghouse Electric Corp. Method for continuously welding a plurality of tubes disposed in multiple rows to a tube sheet. 4,359,621, Cl. 219-60.200.
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Moore, David W.: *See*—
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Zeigler, Philip B.; and Moore, David W., 4,359,264, Cl. 350-281.000.
Moore, Donald L.: *See*—
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Moore, John O., to Sprayrite Manufacturing Co. Assembly means for full coverage recirculating sprayer. 4,359,188, Cl. 239-121.000.
Moore, Richard F. Energy recovery system. 4,359,187, Cl. 237-55.000.
More, Anton, to Wacker-Chemie GmbH. Process for the manufacture of basic slags for the electroslag remelting process. 4,359,337, Cl. 75-257.000.
Moreau, Claude R. M. Compact manufacturing system for forming soft goods mainly toys. 4,358,907, Cl. 46-158.000.
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Morgan, Donald G., to Magnetics International, Inc. Magnetic structure for a magnetic separator. 4,359,382, Cl. 209-223.00A.
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Morris, Merle E.; and Meade, Steven L., to GTE Products Corporation. Filament support for tubular lamp. 4,359,665, Cl. 313-274.000.
Morris, Wilford V., to Hughes Tool Company. Earth boring bit with extended gage. 4,359,113, Cl. 175-337.000.
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Morrison-Knudsen Forest Products Company, Inc.: *See*—
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Morse, Stephen A.: *See*—
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Mostek Corporation: *See*—
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Motorola, Inc.: *See*—
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Motorola, Inc. (Corporate Offices): *See*—
Day, Charles M., 4,359,780, Cl. 455-222.000.
Mount, Ramon A.; and Robinson, Warn D., to Monsanto Company. Solvent conditioning of phosphorus-vanadium-oxygen catalysts. 4,359,405, Cl. 252-435.000.
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Mueller, Lothar, to Siemens Aktiengesellschaft. Installation for several sound and/or heat emitting machines capable of being installed in a workroom. 4,359,085, Cl. 165-47.000.
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Mundel, Gerald, to Siemens Aktiengesellschaft. Monolithically integrable squarewave pulse generator. 4,359,649, Cl. 307-268.000.
Murakami, Kazumasa: *See*—
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Murch, Robert M.; and Eagan, John J., to W. R. Grace & Co. Flow-through dryer and method for rapid drying of porous foams. 4,358,899, Cl. 34-15.000.
Murphy, Arthur B.: *See*—
Dey, Phillip; Fearns, Peter; Plessner, Karl W.; Pickup, Kenneth H.; Gaylard, Bernard; and Murphy, Arthur B., 4,359,598, Cl. 174-40.00R.
Mutyala, Bhaskara R.: *See*—
Miller, Roy W.; and Mutyala, Bhaskara R., 4,359,003, Cl. 105-420.000.
Patil, Babgaunda A.; Mutyala, Bhaskara R.; and Schilf, Harold M., 4,359,002, Cl. 105-410.000.
Myers, Donald W.; and Vivlamore, Samantha L., to Mobil Oil Corporation. Nestable foam cup with improved heat retention and the process for its manufacture. 4,359,160, Cl. 206-519.000.
N. J. Phillips Pty. Ltd.: *See*—
Reynolds, Mervyn F., 4,359,050, Cl. 128-223.000.
Naarmann, Herbert; Penzien, Klaus; and Viehe, Heinz G., to BASF Aktiengesellschaft. Preparation of acetylene copolymers. 4,359,563, Cl. 526-250.000.
Nacci, George R.; and Pie, Donald G., to Du Pont de Nemours, E. I., and Company. Magnetic resist printing process, composition, and apparatus. 4,359,516, Cl. 430-106.600.
Nadkarni, Vikas M.: *See*—
Kane, John L.; and Nadkarni, Vikas M., 4,359,445, Cl. 264-518.000.
Nagahori, Katsuhiro, to SI Handling Systems, Inc. Transfer truck system. 4,358,999, Cl. 104-166.000.
Nagai, Nobuyuki: *See*—
Horiuchi, Takefumi; Kawate, Yoshio; Konishi, Masami; and Nagai, Nobuyuki, 4,358,953, Cl. 374-7.000.
Nagai, Takeshi; Yamamoto, Kazushi; and Kobayashi, Ikuo, to Matsushita Electric Industrial Company, Limited. Method for making a carbide thin film thermistor. 4,359,372, Cl. 204-192.00F.
Nagano, Haruhisa: *See*—
Suda, Yoshikazu; Nagano, Haruhisa; Miyata, Shigeyuki; and Yamori, Akio, 4,359,551, Cl. 524-271.000.
Nagaoka, Shinji: *See*—
Saito, Takeo; Nagaoka, Shinji; Takazawa, Yuzuru; and Segawa, Takashi, 4,359,634, Cl. 250-201.000.
Nair, Vijay G.; Joseph, Joseph P.; Lewis, Arthur J.; and Bernstein, Seymour, to American Cyanamid Company. O-β. -D (and O-α.. -D) Multigalactopyranosyl, xylopyranosyl and glucopyranosyl sulfate salts. 4,359,458, Cl. 424-180.000.
Nair, Vijay G.; and Bernstein, Seymour, to American Cyanamid Company. O-α-D-Multigalactopyranosyl-O-α-D-multiglucopyranosyl-O-β-D-multifructofuranosyl-glucopyranoside sulfate salts. 4,359,459, Cl. 424-180.000.
Nair, Vijay G.; and Bernstein, Seymour, to American Cyanamid Company. 6'-(1-Adamantanecarboxylate)-6-O-α-D-galactopyranosyl-α-D-glucopyranose sulfate salts. 4,359,460, Cl. 424-180.000.
Nair, Vijay G.; and Bernstein, Seymour, to American Cyanamid Company. Mono-, di- and tri-adamantylcarbonyl- digalactopyranosyl-glucopyranosyl- fructofuranose sulfate salts. 4,359,461, Cl. 424-180.000.
Nakagawa, Masami; Shimotsuma, Wataru; Kishimoto, Yoshio; and Sekine, Yoichi, to Matsushita Electric Industrial Co., Ltd. Magneto-fluidic recording apparatus. 4,359,752, Cl. 346-140.00R.
Nakajima, Tohru; and Kamoi, Koichi, to Asahi Kogaku Kogyo Kabushiki Kaisha. Counterbalance device for laser knife. 4,359,308, Cl. 414-719.000.
Nakajima, Yoshio: *See*—
Aihara, Mamoru; Takahashi, Yutaka; Nakajima, Yoshio; and Matsuura, Tsuyoshi, 4,359,273, Cl. 354-23.00D.
Nakamura, Kiyoshi; Nakanishi, Masae; Kawasaki, Syozo; Ochiai, Toshihiko; and Nishida, Katsutoshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Valve for an internal combustion engine. 4,359,022, Cl. 123-188.0AA.
Nakamura, Masakazu; and Hamato, Kikuko, to Sunstar Hamigaki Kabushiki Kaisha. Diagnostic test composition for dental caries activity. 4,359,455, Cl. 424-7.000.
Nakanishi, Masae: *See*—
Nakamura, Kiyoshi; Nakanishi, Masae; Kawasaki, Syozo; Ochiai, Toshihiko; and Nishida, Katsutoshi, 4,359,022, Cl. 123-188.0AA.
Nakatani, Seiichi: *See*—
Nakatani, Yoshihiko; Sakai, Masayuki; Nakatani, Seiichi; and Matsuoka, Michio, 4,359,709, Cl. 338-34.000.
Nakatani, Yoshihiko; Sakai, Masayuki; Nakatani, Seiichi; and Matsuoka, Michio, to Matsushita Electric Industrial Co., Ltd. Combustible gas sensor. 4,359,709, Cl. 338-34.000.
Nakazawa, Yoshihiro: *See*—
Miyamaru, Yukio; Kudou, Masayuki; Nakazawa, Yoshihiro; and Kikuchi, Osamu, 4,359,716, Cl. 340-60.000.
Narayan, Thirumurti; Ramlow, Gerhard G.; and Kan, Peter T., to BASF Wyandotte Corporation. Polyisocyanurate polymers, dispersions, and cellular and non-cellular polyurethane products prepared therefrom. 4,359,550, Cl. 524-871.000.
Narayan, Thirumurti: *See*—
Patton, John T., Jr.; Narayan, Thirumurti; and Ramlow, Gerhard G., 4,359,541, Cl. 521-137.000.
Nash Engineering Company, The: *See*—
Bernard, Paul V., 4,359,313, Cl. 417-68.000.
National Distillers & Chemical Corp.: *See*—
Feldman, Julian, 4,359,593, Cl. 568-916.000.
National Research Development Corporation: *See*—
Rogers, Henry J., 4,359,477, Cl. 424-287.000.
National Semiconductor Corporation: *See*—
Sauer, Don R., 4,359,693, Cl. 329-101.000.
Neal, Bobby L.; and Lowman, Steven R., to Neal Chemical Company, Inc. Dyeing process. 4,359,322, Cl. 8-532.000.
Neal Chemical Company, Inc.: *See*—
Neal, Bobby L.; and Lowman, Steven R., 4,359,322, Cl. 8-532.000.
Neff, Robert A. Board game with interrelated cards and chips. 4,359,226, Cl. 273-243.000.
Nei, Gary E.: *See*—
Pagel, Kenneth L.; Mueller, Lester A.; and Nei, Gary E., 4,358,865, Cl. 5-81.00B.
Nelson Industries Inc.: *See*—
Eriksson, Larry J., 4,359,136, Cl. 181-269.000.
Nestler, Gerhard: *See*—
Merger, Franz; and Nestler, Gerhard, 4,359,584, Cl. 564-393.000.
Netta, Louis A.: *See*—
Hidassy, Laszlo; and Netta, Louis A., 4,359,070, Cl. 140-93.00A.
Neuenschwander, Ernst: *See*—
d'Hondt, Christian; Lohmann, Dieter; and Neuenschwander, Ernst, 4,359,555, Cl. 525-358.000.
Neufeld, Henry L., to Brunswick Corporation. Silent-selective anti-reverse mechanism. 4,359,197, Cl. 242-84.50A.
Neumyer, Richard D.: *See*—
Henderson, Joseph G.; Markham, Alan S.; and Neumyer, Richard D., 4,359,436, Cl. 264-40.600.
Nevarez, Enrique F., to Paloma Ranch, Div. of Cranco. Agricultural implement for building irrigation flow channels. 4,359,106, Cl. 172-529.000.
Neville, David M., Jr.; and Youle, Richard J. Anti Thy 1.2 monoclonal antibody-ricin hybrid utilized as a tumor suppressant. 4,359,457, Cl. 424-85.000.
New York Development Consultants, Ltd.: *See*—
Kammerman, Steven B., 4,359,119, Cl. 180-69.00R.
Newcomb, Robert E., to United States of America, Air Force. High voltage driver amplifier apparatus. 4,359,650, Cl. 307-270.000.
Newman, Sydney. Apparatus for providing a zipper closable garment pocket entry. 4,359,008, Cl. 112-104.000.
Nguyen, Tinh: *See*—
Gaul, James M.; and Nguyen, Tinh, 4,359,507, Cl. 428-425.100.
Nibby, Chester M., Jr.: *See*—
Johnson, Robert B.; and Nibby, Chester M., Jr., 4,359,771, Cl. 371-13.000.
Nicholas, Richard W.: *See*—
Oda, Roy; and Nicholas, Richard W., 4,358,917, Cl. 52-717.000.
Nielsen, Kurt E.: *See*—
Smith, Ian D.; Demeter, Laszlo J.; and Nielsen, Kurt E., 4,359,660, Cl. 378-119.000.
Nihon Regulator Co., Ltd.: *See*—
Hayashi, Hiromi; Takahashi, Shigeru; and Kawamura, Kazuo, 4,359,178, Cl. 226-25.000.
Ninoyu, Yutaka; and Suzuki, Motoyoshi, to Nippondenso Co., Ltd. Constant running speed control system for automobile. 4,359,124, Cl. 180-176.000.
Nipak, Inc.: *See*—
Levens, Joseph A., 4,359,446, Cl. 264-568.000.
Nippon Crucible Co., Ltd.: *See*—
Okada, Tamio; and Murakami, Kazumasa, 4,359,625, Cl. 219-300.000.
Nippon Electric Co., Ltd.: *See*—
Hada, Hiroshi; and Hirayama, Tsutomu, 4,359,648, Cl. 307-254.000.
Kondo, Michikazu, 4,359,268, Cl. 350-377.000.
Takamasa, Suzuki, 4,359,653, Cl. 307-455.000.
Nippon Gakki Seizo K.K.: *See*—
Imamura, Akio, 4,358,980, Cl. 84-1.190.
Nippon Kogaku K.K.: *See*—
Hasegawa, Hiroshi, 4,359,275, Cl. 354-33.000.
Nippon Oil Company, Ltd.: *See*—
Ushio, Masaru; Morita, Tohru; and Ishii, Takeshi, 4,359,379, Cl. 208-120.000.
Nippon Soken, Inc.: *See*—
Matsumoto, Muneaki; Numata, Koji; and Kuno, Akira, 4,358,886, Cl. 29-428.000.
Shinoda, Yoshio; Kuno, Akira; and Matsui, Takeshi, 4,359,125, Cl. 180-179.000.
Nippondenso Co., Ltd.: *See*—
Eguchi, Osamu; and Hattori, Mitsutoshi, 4,359,685, Cl. 324-208.000.
Ito, Yoji; Inoue, Yozo; and Hara, Kiyoshi, 4,358,936, Cl. 62-229.000.
Ninoyu, Yutaka; and Suzuki, Motoyoshi, 4,359,124, Cl. 180-176.000.
Sano, Hiromi; Suzuki, Masatosi; and Fujimoto, Masaya, 4,359,374, Cl. 204-195.00S.
Nishida, Katsutoshi: *See*—
Nakamura, Kiyoshi; Nakanishi, Masae; Kawasaki, Syozo; Ochiai, Toshihiko; and Nishida, Katsutoshi, 4,359,022, Cl. 123-188.0AA.
Nishimura, Yoshiro: *See*—
Matsumoto, Jun-ichi; Takase, Yoshiyuki; and Nishimura, Yoshiro, 4,359,578, Cl. 544-362.000.
Nishizawa, Jun-ichi, to Handotai Kenkyu Shinkokai. Apparatus for producing a semiconductor device utlizing successive liquid growth. 4,359,012, Cl. 118-59.000.
Nissan Diesel Motors Co., Ltd.: *See*—
Furuya, Tadashi; and Ota, Shuji, 4,359,033, Cl. 123-569.000.
Nissan Motor Company, Limited: *See*—
Furuhashi, Shoji; Asano, Masaharu; and Tamura, Hideyuki, 4,359,029, Cl. 123-440.000.

Mase, Yasushi; and Okamura, Toshikazu, 4,359,034, Cl. 123-571.000.
Matsumura, Akira, 4,359,712, Cl. 340-23.000.
Sone, Kohki; and Okamura, Kenji, 4,359,030, Cl. 123-440.000.
Tsunoda, Masakazu, 4,359,713, Cl. 340-52.00F.
Tsunoda, Masakazu; and Mori, Kazuyuki, 4,359,714, Cl. 340-52.00F.
Udono, Jun, 4,358,991, Cl. 91-470.000.
Nissin Kogyo Kabushiki Kaisha: *See*—
Takeuchi, Hiroo, 4,358,990, Cl. 91-376.00R.
NL Industries, Inc.: *See*—
Van Fisk, James, Jr., 4,359,339, Cl. 106-38.300.
Noda, Fumiyoshi: *See*—
Ueno, Hideaki; and Noda, Fumiyoshi, 4,359,410, Cl. 252-463.000.
Noguchi, Kazuma: *See*—
Sekiguchi, Tomozo; and Noguchi, Kazuma, 4,359,290, Cl. 401-32.000.
Nonomura, Keisaku; Shimizu, Keiichiro; and Uede, Hisashi, to Sharp Kabushiki Kaisha. Matrix type liquid crystal display with faculties of providing a visual display in at least two different modes. 4,359,729, Cl. 340-765.000.
Nordblom, George F.: *See*—
Turillon, Pierre P.; Hull, Michael N.; and Nordblom, George F., 4,358,892, Cl. 29-623.500.
Nordenskjold, Ing R. V. Fluid filter. 4,359,388, Cl. 210-387.000.
North American Philips Consumer Electronics Corp.: *See*—
Collins, Floyd K.; and Rychlewski, Thaddeus V., 4,359,664, Cl. 313-270.000.
Northern Telecom, Inc.: *See*—
Haskins, Steve W., 4,359,611, Cl. 200-1.0TK.
Northern Telecom Limited: *See*—
Dolan, Bruce I., 4,359,262, Cl. 350-96.200.
Noto La Diega, Michele, to Costruzioni Meccaniche Industriali Genovesi. Revolving turret for continuous casting, with independent arms, and eccentric load compensation. 4,359,177, Cl. 222-591.000.
Nottingham, John R.; and Spirk, John W. Manipulative fluid-filled game. 4,359,224, Cl. 273-115.000.
Noy, Dan, to Israel Aircraft Industries, Ltd. Method and apparatus for navigation through predetermined loitering paths. 4,359,739, Cl. 343-112.00D.
Numata, Koji: *See*—
Matsumoto, Muneaki; Numata, Koji; and Kuno, Akira, 4,358,886, Cl. 29-428.000.
Nyeste, Laszlo: *See*—
Almasi, Istvan; Kassai, Ferenc; and Nyeste, Laszlo, 4,359,048, Cl. 128-205.120.
Occidental Chemical Corporation: *See*—
Crotty, David E., 4,359,348, Cl. 148-6.160.
Dachs, Norman W., deceased; Ginter, James W.; and Pawlak, Joseph A., 4,359,590, Cl. 568-702.000.
Da Fonte, Bento, Jr., 4,359,345, Cl. 148-6.200.
Da Fonte, Bento, Jr., 4,359,346, Cl. 148-6.200.
Da Fonte, Bento, Jr., 4,359,347, Cl. 148-6.14R.
Occidental Oil Shale, Inc.: *See*—
Ricketts, Thomas E., 4,359,246, Cl. 299-2.000.
Occidental Research Corporation: *See*—
Durai-Swamy, Kandaswamy, 4,359,363, Cl. 202-99.000.
Hard, Robert A.; and Prieto, Martin A., 4,359,449, Cl. 423-82.000.
Tipton, Ann B., 4,359,451, Cl. 423-563.000.
Ochiai, Toshihiko: *See*—
Nakamura, Kiyoshi; Nakanishi, Masae; Kawasaki, Syozo; Ochiai, Toshihiko; and Nishida, Katsutoshi, 4,359,022, Cl. 123-188.0AA.
O'Connor, Neal E.: *See*—
Harvey, Douglas J.; O'Connor, Neal E.; and Bronson, Joseph J., 4,358,884, Cl. 29-402.180.
Oczkowski, Boguslaw, to Johnson & Johnson Products, Inc. Ostomy appliance closure. 4,359,051, Cl. 128-283.000.
Oda, Roy; and Nicholas, Richard W., to Chrysler Corporation. Self-adjustable window molding for retaining glass. 4,358,917, Cl. 52-717.000.
Oeser, Heinz-Guenter: *See*—
Jacobs, Peter; and Oeser, Heinz-Guenter, 4,359,428, Cl. 260-465.00E.
Ohie, Tomonori, to Diesel Kiki Co., Ltd. Electronic fuel injection control system for fuel injection valves. 4,359,032, Cl. 123-458.000.
Ohlsson, Jarl E. S. I., to Texogesa, S.A. Rotary offset printing press. 4,358,996, Cl. 101-217.000.
Ohmiya, Shoji: *See*—
Sano, Kazuhiko; and Ohmiya, Shoji, 4,359,769, Cl. 369-74.000.
Ohta, Shigeto: *See*—
Katagiri, Kazuharu; Watanabe, Katsunori; Ohta, Shigeto; Ishikawa, Shozo; and Kitahara, Makoto, 4,359,513, Cl. 430-58.000.
Katagiri, Kazuharu; Watanabe, Katsunori; Ohta, Shigeto; Ishikawa, Shozo; and Kitahara, Makoto, 4,359,515, Cl. 430-70.000.
Oishi, Norio: *See*—
Okamoto, Kouichi; Sakuyama, Masaki; Furukado, Shoji; and Oishi, Norio, 4,358,937, Cl. 62-505.000.
Okada, Fumio: *See*—
Takamizawa, Minoru; Okada, Fumio; Hara, Yasuaki; Aoki, Hsashi; and Inoue, Yoshio, 4,359,369, Cl. 204-159.130.
Okada, Tamio; and Murakami, Kazumasa, to Nippon Crucible Co., Ltd. Method of preheating immersion nozzle for continuous casting. 4,359,625, Cl. 219-300.000.
Okamoto, Kouichi; Sakuyama, Masaki; Furukado, Shoji; and Oishi, Norio, to Mitsubishi Denki Kabushiki Kaisha. Device for conducting cooling liquid in and out of liquid cooled rotor type rotary electric machine. 4,358,937, Cl. 62-505.000.
Okamura, Kenji: *See*—
Sone, Kohki; and Okamura, Kenji, 4,359,030, Cl. 123-440.000.
Okamura, Kiyohito: *See*—
Yajima, Seishi; Okamura, Kiyohito; Hasegawa, Yoshio; and Yamamura, Takemi, 4,359,559, Cl. 525-475.000.
Okamura, Toshikazu: *See*—
Mase, Yasushi; and Okamura, Toshikazu, 4,359,034, Cl. 123-571.000.
Okuda, Soichiro: *See*—
Ueda, Yoshihiro; Sasao, Hiroyuki; Yoshiyasu, Hajimu; and Okuda, Soichiro, 4,359,616, Cl. 200-148.00A.
Okudaira, Sadao, to Asahi Kogaku Kogyo Kabushiki Kaisha. Zoom lens. 4,359,270, Cl. 350-427.000.
Ole Leth: *See*—
Crillesen, Jan O., 4,359,294, Cl. 403-406.000.
Olin Corporation: *See*—
Chandalia, Kiran B.; and Preston, Frank J., 4,359,542, Cl. 521-137.000.
Fuzesi, Stephen; and Bayusik, John G., 4,359,573, Cl. 536-17.200.
Oliver, Gene S. Detector of defective coating. 4,359,727, Cl. 340-675.000.
Oliver, James T.: *See*—
Freter, Kurt; Fuchs, Victor; and Oliver, James T., 4,359,468, Cl. 424-267.000.
Olsen, Gregory H.; and Botez, Dan, to RCA Corporation. Light emitting device. 4,359,774, Cl. 372-45.000.
Olsson, Billy E.; and Kam, Lit Y., to AMP Incorporated. Socket for a bubble memory package. 4,359,252, Cl. 339-17.0CF.
Olympus Optical Company Ltd.: *See*—
Aihara, Mamoru; Takahashi, Yutaka; Nakajima, Yoshio; and Matsuura, Tsuyoshi, 4,359,273, Cl. 354-23.0JD.
Hashimoto, Akihiko, 4,359,278, Cl. 354-244.000.
Mihara, Shin-ichi, 4,359,271, Cl. 350-432.000.
Omae, Yoshihiro, to Mitsubishi Kasei Kogyo Kabushiki Kaisha. Method and apparatus for preventing generation of smoke from coke ovens. 4,359,362, Cl. 201-1.000.
Omi, Junji: *See*—
Shimizu, Masami; Omi, Junji; Watanabe, Kunio; Uchidoi, Masanori; and Aizawa, Hiroshi, 4,359,277, Cl. 354-219.000.
Omura, Sadafumi: *See*—
Mizutani, Taku; Yamagishi, Michio; Mizoue, Kazutoshi; Kawashima, Akira; Omura, Sadafumi; Otake, Noboru; and Seto, Haruo, 4,359,583, Cl. 549-343.000.
Ona, Isao; Ozaki, Masaru; and Taki, Yoichiro, to Toray Silicone Co., Ltd. Fiber-treating compositions comprising two organo-functional polysiloxanes. 4,359,545, Cl. 524-262.000.
O'Neill, Gerard K. Satellite-based vehicle position determining system. 4,359,733, Cl. 343-6.5LC.
Onishi, Yasuo, to Ushio Denki Kabushikikaisha. Flash discharge lamp. 4,359,662, Cl. 313-213.000.
Onodera, Masahiro: *See*—
Tanabe, Hirokuni; and Onodera, Masahiro, 4,359,711, Cl. 338-134.000.
O'Reilly, David: *See*—
England, Michael D. D., 4,359,601, Cl. 179-1.00D.
Ota, Shuji: *See*—
Furuya, Tadashi; and Ota, Shuji, 4,359,033, Cl. 123-569.000.
Otake, Noboru: *See*—
Mizutani, Taku; Yamagishi, Michio; Mizoue, Kazutoshi; Kawashima, Akira; Omura, Sadafumi; Otake, Noboru; and Seto, Haruo, 4,359,583, Cl. 549-343.000.
Otis Engineering Corporation: *See*—
Risinger, Ronald L., 4,359,094, Cl. 166-317.000.
Otsuka Kogyo Co., Ltd.: *See*—
Otsuka, Koichi, 4,358,964, Cl. 73-861.130.
Otsuka, Koichi, to Otsuka Kogyo Co., Ltd. Electromagnetic flowmeter. 4,358,964, Cl. 73-861.130.
Otte, Werner: *See*—
Burzin, Klaus; and Otte, Werner, 4,359,588, Cl. 568-579.000.
Otto, Jack C.: *See*—
Baczek, Frank A.; Wojcik, Bruce C.; Jueschke, Alexander A.; Lewis, Daniel M.; Otto, Jack C.; and Tuttle, Lawrence L., 4,359,376, Cl. 204-242.000.
Ouano, Augustus C.: *See*—
Carothers, James A.; Economy, James; and Ouano, Augustus C., 4,359,520, Cl. 430-326.000.
Ouellet, Benoit. Vehicle door lock. 4,358,943, Cl. 70-358.000.
Outboard Marine Corporation: *See*—
Scharpf, Otto H., 4,359,027, Cl. 123-307.000.
Owens-Corning Fiberglas Corporation: *See*—
Bershas, James P., 4,359,546, Cl. 524-501.000.
Kane, John L.; and Nadkarni, Vikas M., 4,359,445, Cl. 264-518.000.
Shah, Hashmuk G.; and Machlan, G. Richard, 4,359,444, Cl. 264-518.000.
Ozaki, Masaru: *See*—
Ona, Isao; Ozaki, Masaru; and Taki, Yoichiro, 4,359,545, Cl. 524-262.000.
Package Machinery Company: *See*—
Groom, James S.; and McIntyre, Robert W., 4,358,918, Cl. 53-74.000.
Paddock, Gordon R.: *See*—
Day, Edward G.; Paddock, Gordon R.; and Seidewand, Edward H., 4,358,927, Cl. 60-290.000.

Pagano, Nicholas J., to United States of America, Air Force. Exact involute ply patterns. 4,359,190, Cl. 239-265.110.
Pagel, Kenneth L.; Mueller, Lester A.; and Nei, Gary E., to American Hospital Supply Corporation. Disposable sheet system for patient stretcher. 4,358,865, Cl. 5-81.00B.
Palecek, Vincent J.; and Berg, B. Alan, to TRW Inc. Electrical connector. 4,359,258, Cl. 339-176.0MP.
Paloma Ranch, Div. of Cranco: *See*—
Nevarez, Enrique F., 4,359,106, Cl. 172-529.000.
Pan, Jen-Csung: *See*—
Ikunosuke, Fukuda; Pan, Jen-Csung; and Wang, Shiang-Fu, 4,359,174, Cl. 222-131.000.
Panas, William R.: *See*—
Jarosz, John M.; and Panas, William R., 4,359,708, Cl. 337-159.000.
Pantalone, Antonio, to L.P.E. S.r.l. Self-assembling telescopable structure. 4,358,915, Cl. 52-115.000.
Paolella, Nicholas A.: *See*—
Anderson, Paul L.; and Paolella, Nicholas A., 4,359,474, Cl. 424-273.00P.
Papst, Georg, to Papst Motoren KG. Electric motor with multiple shafts. 4,359,761, Cl. 360-96.300.
Papst Motoren KG: *See*—
Papst, Georg, 4,359,761, Cl. 360-96.300.
Paquin, Patrick J.; and Lang, Donald D., to Eltra Corporation. Twisted pair multi-conductor ribbon cable with intermittent straight sections. 4,359,597, Cl. 174-34.000.
Parker, John J.: *See*—
Fouss, James L.; Parker, John J.; and Lytle, Donald A., 4,359,167, Cl. 220-72.000.
Parker, Roy B.; and Levesque, Daniel R., to Albany International Corp. High performance speaker diaphragm. 4,359,132, Cl. 181-169.000.
Parmer, Kenneth R.: *See*—
Lopinski, Edward J.; and Parmer, Kenneth R., 4,359,257, Cl. 339-99.00R.
Partzel, Karl-Heinz, to Zahnradfabrik Friedrichshafen, Aktiengesellschaft. Gag press. 4,358,945, Cl. 72-12.000.
Pasini, Arnaldo; and Knirsch, Franco, to Ing. C. Olivetti & C., S.p.A. Device and method of non impact printing. 4,359,748, Cl. 346-76.0PH.
Patalong, Hubert; and Krimmel, Eberhard F., to Siemens Aktiengesellschaft. Method of producing alloyed metal contact layers on crystal-orientated semiconductor surfaces by energy pulse irradiation. 4,359,486, Cl. 427-53.100.
Patel, Arvind M., to International Business Machines Corporation. Dual function error correcting system. 4,359,772, Cl. 371-39.000.
Patel, Mahesh G.: *See*—
Weinstein, Marvin J.; Wagman, Gerald H.; Marquez, Joseph A.; and Patel, Mahesh G., 4,359,462, Cl. 424-181.000.
Paterson, James A.; and Koehler, Gary W., to United States of America, Energy. Convectively cooled electrical grid structure. 4,359,667, Cl. 313-348.000.
Patil, Babgaunda A.; Mutyala, Bhaskara R.; and Schilf, Harold M., to Pullman Incorporated. Railway car corner post. 4,359,002, Cl. 105-410.000.
Patterson, John A.; Crawford, Wheeler C.; and Wilson, James R., to Texaco Inc. Novel process for preparing ethylbenzene. 4,359,594, Cl. 585-434.000.
Patton, John T., Jr.; Narayan, Thirumurti; and Ramlow, Gerhard G., to BASF Wyandotte Corporation. Process for the preparation of polyisocyanurate dispersions and compositions prepared therefrom. 4,359,541, Cl. 521-137.000.
Paust, Joachim; and Schmidt, Wolfram, to BASF Aktiengesellschaft. Extraction of pantolactone from its aqueous solutions. 4,359,582, Cl. 549-319.000.
Pawlak, Joseph A.: *See*—
Dachs, Norman W., deceased; Ginter, James W.; and Pawlak, Joseph A., 4,359,590, Cl. 568-702.000.
Paxall, Inc.: *See*—
Eldridge, Charles W., 4,359,214, Cl. 271-5.000.
Payen, Georges A., to Societe Anonyme de Telecommunications. Device for switching two digital trains. 4,359,718, Cl. 340-825.030.
Payne, Bryan. Method for cutting wallboards. 4,359,302, Cl. 409-84.000.
Pearman, A. Noel J.: *See*—
Kude, William B.; and Pearman, A. Noel J., 4,359,284, Cl. 374-37.000.
Pentel Kabushiki Kaisha: *See*—
Sekiguchi, Tomozo; and Noguchi, Kazuma, 4,359,290, Cl. 401-32.000.
Penzien, Klaus: *See*—
Naarmann, Herbert; Penzien, Klaus; and Viehe, Heinz G., 4,359,563, Cl. 526-250.000.
Perkins, David, Jr., to Corrugated Drum Systems, Inc. Carton with removable top. 4,359,182, Cl. 229-45.00R.
Perren, Benno. Feeler for a monitoring apparatus. 4,359,637, Cl. 250-227.000.
Persson, Bengt G., to AB Volvo. Trough-shaped sheet metal component with a deeper and a shallower portion. 4,359,023, Cl. 123-195.00C.
Perz, John: *See*—
Zukotynski, Stefan; Ma, Ki B.; Perz, John; Szadkowski, Andrzej; and Yacobi, Ben-Gur, 4,359,367, Cl. 204-37.00R.
Petermann, Klaus: *See*—
Marschall, Peter; Petermann, Klaus; Schlosser, Ewald; Vollmer, Hans-Peter; and Wolk, Claus, 4,359,775, Cl. 372-45.000.
Peters, Thomas E.: *See*—
Fyie, Joseph A.; and Peters, Thomas E., 4,359,151, Cl. 198-525.000.
Petersen, Carl M., III: *See*—
Gavagan, James A.; Gulette, Ronald S.; Petersen, Carl M., III; West, Frank; and Brennan, William E., 4,359,237, Cl. 280-806.000.
Peterson, Ann E.: *See*—
Gallusser, David O.; and Peterson, Ann E., 4,359,255, Cl. 339-90.00R.
Peterson, Curtis P., to Crucible Inc. Temperature control apparatus. 4,359,210, Cl. 266-87.000.
Peterson, James R. Variable-length sampling device. 4,359,110, Cl. 175-20.000.
Pez, Guido P.: *See*—
Grey, Roger A.; and Pez, Guido P., 4,359,404, Cl. 252-430.000.
Pfister, Hans: *See*—
Blanc, Jean M.; and Pfister, Hans, 4,359,377, Cl. 204-243.00M.
Pfizer Inc.: *See*—
Hamanaka, Ernest S., 4,359,472, Cl. 424-271.000.
Vinick, Fredric J., 4,359,416, Cl. 260-112.50R.
Pfleiderer, Hans-Jorg: *See*—
Grassl, Hans-Peter; Kleinschmidt, Peter; Herbst, Heiner; and Pfleiderer, Hans-Jorg, 4,359,274, Cl. 354-25.000.
Phillips Petroleum Company: *See*—
Beauford, Martin H.; and Fritts, Thomas V., 4,359,731, Cl. 340-825.510.
Stacy, Carl J.; and Wood, Jerold D., 4,359,342, Cl. 523-216.000.
Phillips, Robert B., to Australasian Training Aids (Pty.) Limited. Piezoelectric shock wave detector. 4,359,659, Cl. 310-335.000.
Physics International Company: *See*—
Smith, Ian D.; Demeter, Laszlo J.; and Nielsen, Kurt E., 4,359,660, Cl. 378-119.000.
Pickup, Kenneth H.: *See*—
Dey, Phillip; Fearns, Peter; Plessner, Karl W.; Pickup, Kenneth H.; Gaylard, Bernard; and Murphy, Arthur B., 4,359,598, Cl. 174-40.00R.
Pie, Donald G.: *See*—
Nacci, George R.; and Pie, Donald G., 4,359,516, Cl. 430-106.600.
Pieczenik, George. Autonomously replicating DNA containing inserted DNA sequences. 4,359,535, Cl. 435-317.000.
Pieri, Lorenzo: *See*—
Gerecke, Max; Haefely, Willy; Hunkeler, Walter; Kyburz, Emilio; Mohler, Hanns; Pieri, Lorenzo; and Polc, Petar, 4,359,420, Cl. 260-239.30B.
Pietsch, Erich, to M.A.N.-Roland Druckmaschinen Aktiengesellschaft. Method of making a circular wedge for use as an adjusting element in a printing press or the like. 4,358,966, Cl. 74-567.000.
Pines, Howard S.: *See*—
Pope, William L.; Pines, Howard S.; Doyle, Padraic A.; and Silvester, Lenard F., 4,358,930, Cl. 60-647.000.
Pitney Bowes Deutschland GmbH: *See*—
Schottle, Helmut A. M., 4,358,997, Cl. 101-316.000.
Pittsburgh & Conneaut Dock Company, The: *See*—
Kane, John J., 4,359,172, Cl. 222-1.000.
Piziali, Robert L.: *See*—
Schurman, David J.; and Piziali, Robert L., 4,358,859, Cl. 3-1.911.
Plastech Inc.: *See*—
Buehler, Amsey; and Marquis, Robert P., 4,359,194, Cl. 242-46.300.
Plessers, Jacques, to Electro-Nite Co. Method and apparatus for predicting metallographic structure. 4,358,948, Cl. 374-26.000.
Plessner, Karl W.: *See*—
Dey, Phillip; Fearns, Peter; Plessner, Karl W.; Pickup, Kenneth H.; Gaylard, Bernard; and Murphy, Arthur B., 4,359,598, Cl. 174-40.00R.
PLM Aktiebolag: *See*—
Jakobsen, Kjell M., 4,359,165, Cl. 215-1.00C.
Pociluyko, Alex, to Scott Paper Company. Bleed-fast cationic dye stuffs. 4,359,419, Cl. 260-176.000.
Polaroid Corporation: *See*—
Bloom, Stanley M.; Borror, Alan L.; and Foley, James W., 4,359,574, Cl. 544-135.000.
Bourgeois, Gerard J., 4,359,517, Cl. 430-213.000.
Erlichman, Irving; and Lothrop, John W., 4,359,149, Cl. 198-347.000.
Gerber, Arthur M., 4,359,525, Cl. 430-567.000.
Hanselman, Raymond B.; and Schreiber, Karl J., 4,359,518, Cl. 430-236.000.
Rogers, Howard G.; Eckert, Robert D.; Sahatjian, Ronald A.; and Sulesky, Robert A., 4,359,397, Cl. 252-194.000.
Walworth, Vivian K., 4,359,526, Cl. 430-568.000.
Polc, Petar: *See*—
Gerecke, Max; Haefely, Willy; Hunkeler, Walter; Kyburz, Emilio; Mohler, Hanns; Pieri, Lorenzo; and Polc, Petar, 4,359,420, Cl. 260-239.30B.
Polidoro, Albert V. Folding shelf cabinet. 4,359,251, Cl. 312-245.000.
Polk, Donald E.: *See*—
Ray, Ranjan; Polk, Donald E.; and Giessen, Bill C., 4,359,352, Cl. 148-31.000.
Pollard, Clarice F. Carton assembly for presliced pastry. 4,359,159, Cl. 206-551.000.
Pommer, Ernst-Heinrich: *See*—
Ammermann, Eberhard; Zeeh, Bernd; Hamprecht, Gerhard; and Pommer, Ernst-Heinrich, 4,359,471, Cl. 424-269.000
Pomorin, Karl-Heinz: *See*—
Leist, Helmut J.; and Pomorin, Karl-Heinz, 4,359,054, Cl. 128-635.000.
Ponto, Robert; and Martin, Hardison G. Programable low impedance digital attenuators. 4,359,600, Cl. 179-1.00B.

Ponto, Robert A.; and Martin, Hardison G. Multiple input audio program system. 4,359,602, Cl. 179-1.00B.
Pope, William L.; Pines, Howard S.; Doyle, Padraic A.; and Silvester, Lenard F., to United States of America, Energy. Method of optimizing performance of Rankine cycle power plants. 4,358,930, Cl. 60-647.000.
Popoff, Andrew, to Keuffel & Esser Company. Photographic processing apparatus with liquid application to both sides of the photographic material. 4,359,279, Cl. 354-320.000.
Porciello, Joseph. Game of chance. 4,359,227, Cl. 273-268.000.
Porter, John H., to Ladd Research Industries, Inc. Differential fiber optic proximity sensor. 4,358,960, Cl. 73-705.000.
Postle, Stephen R., to Ciba-Geigy AG. Photographic element containing a UV-filter layer. 4,359,522, Cl. 430-512.000.
Postle, Stephen R., to Ciba-Geigy AG. Photographic element containing a UV-filter layer. 4,359,523, Cl. 430-512.000.
Potaczek, Jan J., to Advance Tapes (U.K.) Limited. Gelatinous articles and compositions. 4,359,047, Cl. 128-156.000.
Potter, Bronson. Electric blanket heating control with capacitance sensing. 4,359,626, Cl. 219-490.000.
PPG Industries, Inc.: *See—*
Henery, Vern A., 4,359,493, Cl. 427-255.100.
Prats, Danny J.: *See—*
Roller, George J.; and Prats, Danny J., 4,359,217, Cl. 271-186.000.
Pressure Technology, Inc.: *See—*
Bowles, Arnold G., 4,359,336, Cl. 75-226.000.
Preston, Frank J.: *See—*
Chandalia, Kiran B.; and Preston, Frank J., 4,359,542, Cl. 521-137.000.
Prevo, Donald L. Device for spreading monolayered films. 4,359,013, Cl. 118-100.000.
Prieto, Martin A.: *See—*
Hard, Robert A.; and Prieto, Martin A., 4,359,449, Cl. 423-82.000.
Princeton Chemical Research, Inc.: *See—*
Magder, Jules; and Reich, Murray H., 4,359,497, Cl. 428-141.000.
Printronix, Inc.: *See—*
Barrus, Gordon B.; and Matula, Jerry, 4,359,289, Cl. 400-322.000.
Procter & Gamble Company, The: *See—*
Crosby, Thomas G., 4,359,482, Cl. 426-606.000.
Ward, James F.; and Gilbert, Lawrence A., 4,359,413, Cl. 252-527.000.
Produits Chimiques Ugine Kuhlmann: *See—*
Balde, Daniel H.; and Boutemy, Gerard E. M., 4,359,333, Cl. 71-92.000.
Pullman Incorporated: *See—*
Miller, Roy W.; and Mutyala, Bhaskara R., 4,359,003, Cl. 105-420.000.
Patil, Babgaunda A.; Mutyala, Bhaskara R.; and Schilf, Harold M., 4,359,002, Cl. 105-410.000.
Pullukat, Thomas J.: *See—*
Hoff, Raymond E.; Pullukat, Thomas J.; and Shida, Mitsuzo, 4,359,403, Cl. 252-429.00B.
Puppe, Lothar; Voigt, Reiner; Borgardt, Manfred; Moretto, Hans-Heinrich; and Munchenbach, Bernard, to Bayer Aktiengesellschaft. Vinyl-silicone pastes for dental impression. 4,359,565, Cl. 528-15.000.
Puryear, John W., to Brunswick Corporation. Spinning reel housing with an access opening and removable cap therefor. 4,359,196, Cl. 242-84.20R.
Pustejovsky, Dan, to Allis-Chalmers Corporation. Cotton stripper finger attachment. 4,358,921, Cl. 56-34.000.
R & D Associates: *See—*
Latter, Albert L.; Dooley, James L.; and Hammond, R. Philip, 4,359,118, Cl. 180-54.00B.
R. J. Reynolds Tobacco Company: *See—*
Leonard, Gerard E., 4,359,216, Cl. 271-107.000.
Radtke, Gerd; Heerde, Klaus; Steiner, Hans-Joachim; and Mechelke, Klaus, to VEB Werkzeugkombinat Schmalkalden. Pneumatic hammer having a safety device. 4,359,108, Cl. 173-15.000.
Raduechel, Bernd: *See—*
Skuballa, Werner; Raduechel, Bernd; and Vorbrueggen, Helmut, 4,359,581, Cl. 549-421.000.
Railgon Company: *See—*
Brodeur, Rene H.; and Terlecky, Boris S., 4,359,001, Cl. 105-406.00R.
Rait, Joseph M., to Technomadic Corporation. Liquid level gauge. 4,358,955, Cl. 73-295.000.
Raivola, Pertti; Wikstroom, Bo; and Kaskinen, Pellervo. Electronic reactive power regulator. 4,359,678, Cl. 323-211.000.
Ralston, Daniel L., to Conoco Inc. Activated magnesium oxide catalysts. 4,359,408, Cl. 252-440.000.
Ramlow, Gerhard G.: *See—*
Narayan, Thirumurti; Ramlow, Gerhard G.; and Kan, Peter T., 4,359,550, Cl. 524-871.000.
Patton, John T., Jr.; Narayan, Thirumurti; and Ramlow, Gerhard G., 4,359,541, Cl. 521-137.000.
Ratti, Mario, to S.U.S.T.A. S.p.A. Bushing for the holding of tools, spindles or like parts, particularly for the use in supporting units in combination with numerical control machines. 4,359,163, Cl. 211-60.00T.
Ravoire, Jean: *See—*
Beaujard, Jean; Menes, Jean-Claude; and Ravoire, Jean, 4,359,331, Cl. 55-342.000.
Ray, Ranjan; Polk, Donald E.; and Giessen, Bill C., to Marko Materials, Inc. Nickel base superalloys which contain boron and have been processed by a rapid solidification process. 4,359,352, Cl. 148-31.000.
Raychem Corporation: *See—*
Caponigro, Dennis A.; and Lopes, Eugene F., 4,359,502, Cl. 428-251.000.
RCA Corporation: *See—*
Gange, Robert A., 4,359,671, Cl. 315-366.000.
Hammer, Jacob M., 4,359,373, Cl. 204-192.00E.
Holmes, David D., 4,359,760, Cl. 358-167.000.
Olsen, Gregory H.; and Botez, Dan, 4,359,774, Cl. 372-45.000.
Schneider, Dennis M.; and Amery, John G., 4,359,756, Cl. 358-27.000.
Smith, Robert R., 4,359,375, Cl. 204-212.000.
Redl, Heinz; and Kriwetz, Gert, to Immuno Aktiengesellschaft fur chemisch-medizinische Produkte. Apparatus for applying a tissue adhesive on the basis of human or animal proteins. 4,359,049, Cl. 128-218.0PA.
Reed, Nanci W.: *See—*
Guimond, Roy A.; Gulliksen, John E.; and Reed, Nanci W., 4,359,509, Cl. 429-140.000.
Regan, John F., to Wescom Switching, Inc. Switching d-c. regulator and load-sharing system for multiple regulators. 4,359,679, Cl. 323-272.000.
Reich, Murray H.: *See—*
Magder, Jules; and Reich, Murray H., 4,359,497, Cl. 428-141.000.
Reid, Dean F., to Honeywell Inc. Cathode ray tube display apparatus. 4,359,745, Cl. 346-23.000.
Reinhart, Franz K.; and Shelton, James C., to Bell Telephone Laboratories, Incorporated. Optical polarizer. 4,359,260, Cl. 350-96.120.
Reininga, Gary W. Calendar. 4,358,906, Cl. 40-107.000.
Reisch, Franz S.: *See—*
Chai, Thomas Y.; Reisch, Franz S.; and Wu, M. T., 4,359,720, Cl. 340-365.00C.
Reishauer AG: *See—*
Vogelsanger, Emil, 4,358,911, Cl. 51-94.0CS.
Renco Corporation: *See—*
Carlson, David L., 4,359,055, Cl. 128-660.000.
Carlson, David L., 4,359,056, Cl. 128-660.000.
Resonant Technology Company: *See—*
Gurries, Raymond A.; and Stormon, Harry J., 4,359,102, Cl. 172-40.000.
Rexnord Inc.: *See—*
Kelm, Alvin; and Freiwald, Edward S., 4,359,208, Cl. 254-362.000.
Reynolds, Mervyn F., to N. J. Phillips Pty. Ltd. Drench gun. 4,359,050, Cl. 128-223.000.
Rhodes, Roger D. Amphibious furniture. 4,358,866, Cl. 114-363.000.
Rice, George W.: *See—*
Waters, Kenneth H.; Rice, George W.; Scanlan, Anthony J.; and Stebens, Beverly B., 4,359,766, Cl. 367-38.000.
Richard, Alan A.: *See—*
Dostoomian, Ashod S.; Richard, Alan A.; Traub, Alan C.; and Vanzetti, Riccardo, 4,359,622, Cl. 219-110.000.
Richey, Joseph B.: *See—*
McBride, Thomas R.; and Richey, Joseph B., 4,359,759, Cl. 358-111.000.
Richter, Konrad: *See—*
Stein, Dieter; Bachl, Robert; and Richter, Konrad, 4,359,562, Cl. 526-129.000.
Ricketts, Thomas E., to Occidental Oil Shale, Inc. In situ oil shale retort with non-uniformly distributed void fraction. 4,359,246, Cl. 299-2.000.
Ricoh Company, Ltd.: *See—*
Hosaka, Masao; and Yanagawa, Nobuyuki, 4,359,670, Cl. 315-307.000.
Rieger, Franz: *See—*
Maurer, Helmut; Rieger, Franz; Muller, Klaus; and Linder, Ernst, 4,358,952, Cl. 73-35.000.
Riggenmann, Hans-Jurgen: *See—*
Funke, Herbert; and Riggenmann, Hans-Jurgen, 4,359,312, Cl. 417-18.000.
Risinger, Ronald L., to Otis Engineering Corporation. Shear relief valve. 4,359,094, Cl. 166-317.000.
Ritchey, Eugene B. Identification tag for livestock. 4,359,015, Cl. 119-156.000.
Roantree, Michael L.; and Young, Rodney C., to Smith Kline & French Laboratories Limited. Guanidine compounds. 4,359,466, Cl. 424-263.000.
Robbins Machine, Inc.: *See—*
Miller, James D.; Lund, Worm; and Jones, Donald W., 4,359,114, Cl. 175-344.000.
Robert Bosch GmbH: *See—*
Fasterding, Henning; Franz, Herbert; and Walker, Gerhard, 4,359,636, Cl. 310-68.00R.
Huber, Bernd; Schneider, Erich; and Fleischer, Helmut, 4,359,717, Cl. 340-63.000.
Maurer, Helmut; Rieger, Franz; Muller, Klaus; and Linder, Ernst, 4,358,952, Cl. 73-35.000.
Seeger, Karl; Jundt, Werner; and Mezger, Manfred, 4,359,036, Cl. 123-609.000.
Spannhake, Dieter; and Chwalkowski, Otto, 4,359,707, Cl. 335-284.000.
Robinson, Warn D.: *See—*
Mount, Ramon A.; and Robinson, Warn D., 4,359,405, Cl. 252-435.000.
Robson, Alan, to EMI Limited. Demodulator for frequency modulated signal accompanied by reference signal. 4,359,691, Cl. 329-50.000.
Rock, Gail A. Stabilization of Factor VIII activity in whole blood or blood plasma. 4,359,463, Cl. 424-101.000.

Rockwell International Corporation: *See*—
Hallford, Ben R., 4,359,781, Cl. 455-327.000.
Hallford, Ben R., 4,359,782, Cl. 455-327.000.
Heaton, Donald L., 4,359,603, Cl. 179-1.0CN.

Rode, Klaus: *See*—
Kornbichler, Heinz; Sartor, Bruno; and Rode, Klaus, 4,359,356, Cl. 156-175.000.

Roesner, Bruce, to Burroughs Corporation. Method of forming a metal semiconductor field effect transistor. 4,358,891, Cl. 29-571.000.

Rogers, Henry J., to National Research Development Corporation. Enterochelin complexes. 4,359,477, Cl. 424-287.000.

Rogers, Howard G.; Eckert, Robert D.; Sahatjian, Ronald A.; and Sulesky, Robert A., to Polaroid Corporation. Benzotriazole complexes and film units employing same. 4,359,397, Cl. 252-194.000.

Rogers, Lloyd W., Jr., to General Motors Corporation. Guide ring assembly for seat belts. 4,359,236, Cl. 280-804.000.

Rohlf, Donna; and Lopez, Ruben M., to Rohlf, Donna. Rear view mirror assembly for collapsible stroller. 4,359,266, Cl. 350-307.000.

Rohm and Haas Company: *See*—
Chong, Berni P., 4,359,537, Cl. 521-29.000.
Merritt, Richard F.; and Larsson, Bjorn E., 4,359,564, Cl. 526-260.000.

Roller, George J.; and Prats, Danny J., to Xerox Corporation. Inverter with proportional force paper drive. 4,359,217, Cl. 271-186.000.

Rollmann, Louis D., to Mobil Oil Corporation. Selective production of olefins. 4,359,595, Cl. 585-640.000.

Rolls-Royce Limited: *See*—
Chivers, John W. H., 4,359,683, Cl. 324-58.50B.
Wilkinson, Bernard H., 4,358,882, Cl. 29-156.80H.

Rooney, Craig E., to Engineering Research Applications, Inc. Universal keyboard and method of producing same. 4,359,612, Cl. 200-5.00R.

Rooney, Craig E., to Engineering Research Applications, Inc. Molded keyboard and method of fabricating same. 4,359,613, Cl. 200-5.00R.

Roquette Freres: *See*—
Devos, Francis; Beuque, Patrick; and Huchette, Michel, 4,359,528, Cl. 435-43.000.

Rozman, Dragoljub, to Sandvik Kosta G.m.b.H. Work clamping fixture. 4,358,973, Cl. 82-40.00R.

Rozzi, Tullio E.: *See*—
Acket, Gerard A.; de Waard, Peter J.; Khoe, Giok D.; Wirtz, Gijsbrecht C.; and Rozzi, Tullio E., 4,359,776, Cl. 372-46.000.

Ruben, Samuel; and Kalker, Philip E., to Emdee Corporation. Liquid level indicator. 4,358,956, Cl. 73-301.000.

Rudolph, Werner: *See*—
Bohm, Horst; Rudolph, Werner; and Massonne, Joachim, 4,359,371, Cl. 204-163.00R.

Ruenzi, Kurt. Device for feeding sheets of paper to a copier. 4,359,215, Cl. 271-22.000.

Rusanov, Alexander I.; Gavrilov, Vitaly P.; Yarmashev, Jury N.; Arbuzov, Pavel M.; and Levit, Nadezhda M. Precleaner of a grain harvesting machine. 4,359,058, Cl. 130-27.00Z.

Ruwart, Mary J., to Upjohn Company, The. Methods for treating gastrointestinal inflammation. 4,359,465, Cl. 424-263.000.

Ryan, Carl R., to Motorola Inc. Rapid acquisition shift keyed signal demodulator. 4,359,692, Cl. 329-50.000.

Rychlewski, Thaddeus V.: *See*—
Collins, Floyd K.; and Rychlewski, Thaddeus V., 4,359,664, Cl. 313-270.000.

Rygg, Ralph H., to Mobil Oil Corporation. Stabilization of modified cellulose in brines at high temperatures. 4,359,392, Cl. 252-8.55R.

S&C Electric Company: *See*—
Jarosz, John M.; and Panas, William R., 4,359,708, Cl. 337-159.000.

S.U.S.T.A. S.p.A.: *See*—
Ratti, Mario, 4,359,163, Cl. 211-60.00T.

Sachs, Bertram; Borburgh, Jacques; and Feigt, Ingmar, to Siemens Aktiengesellschaft. Ultrasonic array. 4,359,767, Cl. 367-105.000.

Sagarian, John, to Ilco Unican Corp. Milling cutter. 4,359,299, Cl. 407-55.000.

Sahatjian, Ronald A.: *See*—
Rogers, Howard G.; Eckert, Robert D.; Sahatjian, Ronald A.; and Sulesky, Robert A., 4,359,397, Cl. 252-194.000.

Saito, Takeo; Nagaoka, Shinji; Takazawa, Yuzuru; and Segawa, Takashi, to Seiko Koki Kabushiki Kaisha. Automatic focusing device. 4,359,634, Cl. 250-201.000.

Sakai, Masayuki: *See*—
Nakatani, Yoshihiko; Sakai, Masayuki; Nakatani, Seiichi; and Matsuoka, Michio, 4,359,709, Cl. 338-34.000.

Sakurai, Nobuo. Method and apparatus for controlling the feeding of a bandsaw blade of horizontal bandsaw machines. 4,358,974, Cl. 83-13.000.

Sakuyama, Masaki: *See*—
Okamoto, Kouichi; Sakuyama, Masaki; Furukado, Shoji; and Oishi, Norio, 4,358,937, Cl. 62-505.000.

Salathiel, William M.; Muecke, Thomas W.; Cooke, Claude E., Jr.; and Li, Norman N., to Exxon Production Research Co.; and Exxon Research and Engineering Co. Well treatment with emulsion dispersions. 4,359,391, Cl. 252-8.55C.

Salmre, William, to Exxon Research and Engineering Co. Ink jet printer with peristaltic pump. 4,359,744, Cl. 346-1.100.

Sanborn, Duane F.; Holman, John L. M.; and Ware, Chester D., to Trane Company, The. Heat exchange surface with porous coating and subsurface cavities. 4,359,086, Cl. 165-133.000.

Sanders Associates, Inc.: *See*—
Baer, Ralph H.; and Cope, Leonard D., 4,359,223, Cl. 273-85.00G.

Sandoz, Inc.: *See*—
Anderson, Paul L.; and Paolella, Nicholas A., 4,359,474, Cl. 424-273.00P.

Sandvik Kosta G.m.b.H.: *See*—
Rozman, Dragoljub, 4,358,973, Cl. 82-40.00R.

Sankaran, Venkatesa: *See*—
Marvel, Carl S.; and Sankaran, Venkatesa, 4,359,568, Cl. 528-183.000.

Sano, Hiromi; Suzuki, Masatosi; and Fujimoto, Masaya, to Nippondenso Co., Ltd.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Oxygen sensor. 4,359,374, Cl. 204-195.00S.

Sano, Kazuhiko; and Ohmiya, Shoji, to Matsushita Electric Industrial Co., Ltd. Signal reproduction apparatus. 4,359,769, Cl. 369-74.000.

Santoro, Giovanni. Cassette tape recorder. 4,359,180, Cl. 226-188.000.

Sard, Juan A. Drainpipe cleaner. 4,358,861, Cl. 4-255.000.

Sartor, Bruno: *See*—
Kornbichler, Heinz; Sartor, Bruno; and Rode, Klaus, 4,359,356, Cl. 156-175.000.

Sasaki, Kojiro, to Brother Kogyo Kabushiki Kaisha. Hand knitting machine. 4,358,938, Cl. 66-64.000.

Sasao, Hiroyuki: *See*—
Ueda, Yoshihiro; Sasao, Hiroyuki; Yoshiyasu, Hajimu; and Okuda, Soichiro, 4,359,616, Cl. 200-148.00A.

Sauer, Don R., to National Semiconductor Corporation. Full wave amplitude modulation detector circuit. 4,359,693, Cl. 329-101.000.

Scanlan, Anthony J.: *See*—
Waters, Kenneth H.; Rice, George W.; Scanlan, Anthony J.; and Stebens, Beverly B., 4,359,766, Cl. 367-38.000.

Schacht, Ezra L.; and Spain, Barry E. Electrical conversion apparatus for individual tenant metering. 4,359,645, Cl. 307-113.000.

Schantz, Spencer C. Relay for microwave oven. 4,359,702, Cl. 335-2.000.

Scharpf, Otto H., to Outboard Marine Corporation. Two-cycle internal combustion engine having high swirl combustion chamber. 4,359,027, Cl. 123-307.000.

Schedele, Helmut, to Siemens Aktiengesellschaft. Electromagnetic relay. 4,359,703, Cl. 335-202.000.

Scheffre nee Spilimann, Irene, heir: *See*—
Spillmann, Werner, deceased; Spillmann, Emilie, heir; Scheffre nee Spillmann, Irene, heir; Spillmann, Rolf, heir; and Lehmann, Rolf, 4,358,993, Cl. 99-483.000.

Scheicher, Hans: *See*—
Strohmaier, Ernst; Scheicher, Hans; and Eibofner, Eugen, 4,359,317, Cl. 433-85.000.

Scheiderich, Robert F.: *See*—
Comper, Louis F.; and Scheiderich, Robert F., 4,359,340, Cl. 106-38.220.

Schering AG: *See*—
Skuballa, Werner; Raduechel, Bernd; and Vorbrueggen, Helmut, 4,359,581, Cl. 549-421.000.

Schering Aktiengesellschaft: *See*—
Vorbruggen, Helmut; Schwarz, Norbert; Loge, Olaf; and Elger, Walter, 4,359,467, Cl. 424-263.000.

Schering Corporation: *See*—
Weinstein, Marvin J.; Wagman, Gerald H.; Marquez, Joseph A.; and Patel, Mahesh G., 4,359,462, Cl. 424-181.000.

Schiekel, Manfred, to Licentia Patent-Verwaltungs-GmbH. Recording medium and method for making a record on the recording medium. 4,359,749, Cl. 346-135.100.

Schilf, Harold M.: *See*—
Patil, Babgaunda A.; Mutyala, Bhaskara R.; and Schilf, Harold M., 4,359,002, Cl. 105-410.000.

Schlademan, James A., to Atlantic Richfield Company. Coating with dusting agents in pelletizing tacky elastomeric materials. 4,359,492, Cl. 427-222.000.

Schlosser, Ewald: *See*—
Marschall, Peter; Petermann, Klaus; Schlosser, Ewald; Vollmer, Hans-Peter; and Wolk, Claus, 4,359,775, Cl. 372-45.000.

Schmidt, Hartmut: *See*—
d'Arcy, Rainer-Lionel; and Schmidt, Hartmut, 4,359,071, Cl. 141-1.000.

Schmidt, Karl M.: *See*—
Cole, George S.; and Schmidt, Karl M., 4,358,902, Cl. 36-28.000.

Schmidt, Willi; Schwuchow, Norbert; and Burk, Gerhard, to Daimler-Benz A.G. Passenger motor vehicle with yielding body front sections. 4,359,120, Cl. 180-69.00R.

Schmidt, Wolfram: *See*—
Paust, Joachim; and Schmidt, Wolfram, 4,359,582, Cl. 549-319.000.

Schmitt, Frederick L.: *See*—
Schreck, Ronald P.; Light, Kenneth K.; Hall, John B.; Schmitt, Frederick L.; Vock, Manfred H.; Schreiber, William L.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,359,395, Cl. 252-174.110.

Schmitz, Walter: *See*—
Fritsch, Gunter; Vollmer, Heinz; and Schmitz, Walter, 4,359,439, Cl. 264-135.000.

Schmolka, Irving R., to BASF Wyandotte Corporation. Hypocholesterolaemic agents. 4,359,478, Cl. 424-308.000.

Schmoock, Roy F., to Fischer & Porter Company. Unitary electromagnetic flowmeter with sealed coils. 4,358,963, Cl. 73-861.120.

Schneider, Dennis M.; and Amery, John G., to RCA Corporation. Chrominance signal limiter. 4,359,756, Cl. 358-27.000.

Schneider, Erich: *See*—
Huber, Bernd; Schneider, Erich; and Fleischer, Helmut, 4,359,717, Cl. 340-63.000.

Schneider, Michael, to Exxon Research and Engineering Co. Method for applying an anti-reflection coating to a solar cell. 4,359,487, Cl. 427-75.000.

Schneiter, Fred E.; and Cadwell, David C., to Thiokol Corporation. Igniter for a pyrotechnic gas bag inflator. 4,358,998, Cl. 102-530.000.

Schnell, Horst. Lubricating system. 4,359,141, Cl. 184-6.260.

Schoennagel, Hans J.: *See*—
Landolt, George R.; McHale, William D.; and Schoennagel, Hans J., 4,359,400, Cl. 252-415.000.

Schoeppel, Roger J.: *See*—
Terry, Lynn E.; and Schoeppel, Roger J., 4,358,931, Cl. 60-649.000.

Schonert, Klaus. Method of and an apparatus for finely dividing inelastic materials. 4,359,193, Cl. 241-3.000.

Schonmeier, Herbert: *See*—
Thievessen, Karl; Weiss, Peter; and Schonmeier, Herbert, 4,359,195, Cl. 242-68.000.

Schottle, Helmut A. M., to Pitney Bowes Deutschland GmbH. Address printing machine. 4,358,997, Cl. 101-316.000.

Schreck, Ronald P.; Light, Kenneth K.; Hall, John B.; Schmitt, Frederick L.; Vock, Manfred H.; Schreiber, William L.; Vinals, Joaquin F.; and Kiwala, Jacob, to International Flavors & Fragrances Inc. Process for enhancing the organoleptic properties of perfumed articles using alkyl esters of 1-alkanolyl cycloalkanols. 4,359,395, Cl. 252-174.110.

Schreiber, Karl J.: *See*—
Hanselman, Raymond B.; and Schreiber, Karl J., 4,359,518, Cl. 430-236.000.

Schreiber, William L.: *See*—
Schreck, Ronald P.; Light, Kenneth K.; Hall, John B.; Schmitt, Frederick L., Vock, Manfred H.; Schreiber, William L.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,359,395, Cl. 252-174.110.

Schroeder, Carl W.; and Webster, Joseph R., to Shell Oil Company. Retort-sterilizable pouch. 4,359,495, Cl. 428-35.000.

Schroeder, William L., to International Harvester Co. Transmission neutral lever lock. 4,358,965, Cl. 74-475.000.

Schultz, Donald C.; and Jones, Charles R., to Dana Corporation. Impeller lubrication system for transmission pocket bearing. 4,359,142, Cl. 184-11.00R.

Schultz, Gregory K. Motorcycle safety-release back rest. 4,359,129, Cl. 180-268.000.

Schumperli, Walter: *See*—
Loepfe, Erich; Weidmann, Erich; and Schumperli, Walter, 4,359,068, Cl. 139-370.200.

Schurman, David J.; and Piziali, Robert L. Articulated prosthetic knee and method for implanting same. 4,358,859, Cl. 3-1.911.

Schuurman, Pieter J.; and Teekens, Marius B., to Shell Oil Company. Fluidized bed reactor for exothermic reactions. 4,359,448, Cl. 422-143.000.

Schwarz, Norbert: *See*—
Vorbruggen, Helmut; Schwarz, Norbert; Loge, Olaf; and Elger, Walter, 4,359,467, Cl. 424-263.000.

Schwarzer, Rudolf J., to Honeywell Inc. Hall effect alarm pull station. 4,359,719, Cl. 340-287.000.

Schweitzer, Francis E., to Du Pont de Nemours, E. I., and Company. Alkylated isoadipoguanamine-formaldehyde crosslinking resin and improved coating compositions produced therefrom. 4,359,500, Cl. 428-212.000.

Schwuchow, Norbert: *See*—
Schmidt, Willi; Schwuchow, Norbert; and Burk, Gerhard, 4,359,120, Cl. 180-69.00R.

Sciortino, August M. Self-locking coin receptacle and cover therefor. 4,359,184, Cl. 232-16.000.

SCM Corporation: *See*—
Ho, Tse-Lok; and Liu, Shing-Hou, 4,359,586, Cl. 568-341.000.

Scott, John G. V.: *See*—
Fryberg, Mario; Hagen, Remon; and Scott, John G. V., 4,359,521, Cl. 430-505.000.

Scott, John W., to Chevron Research Company. Catalytic cracking process for improved octane. 4,359,378, Cl. 208-120.000.

Scott Paper Company: *See*—
Pociluyko, Alex, 4,359,419, Cl. 260-176.000.

Seagrove, Douglas J. W.: *See*—
Czoch, Jerzy W.; Seagrove, Douglas J. W.; Green, Robert J.; and Morgan, Martin D., 4,359,152, Cl. 198-572.000.

Sealectro Corporation: *See*—
Iantorno, James, 4,359,253, Cl. 339-19.000.

Sedam, Jason K.; and Fuerst, William R., to Coca-Cola Company, The. Post-mix beverage dispensing system syrup package, valving system, and carbonator therefor. 4,359,432, Cl. 261-26.000.

Seeger, Karl; Jundt, Werner; and Mezger, Manfred, to Robert Bosch GmbH. Ignition system for internal combustion engines. 4,359,036, Cl. 123-609.000.

Seel, Holger, to Autoflug GmbH. Plug-in fastener for motor vehicle safety belts. 4,358,878, Cl. 24-230.00A.

Segawa, Takashi: *See*—
Saito, Takeo; Nagaoka, Shinji; Takazawa, Yuzuru; and Segawa, Takashi, 4,359,634, Cl. 250-201.000.

Seidewand, Edward H.: *See*—
Day, Edward G.; Paddock, Gordon R.; and Seidewand, Edward H., 4,358,927, Cl. 60-290.000.

Seiko Koki Kabushiki Kaisha: *See*—
Saito, Takeo; Nagaoka, Shinji; Takazawa, Yuzuru; and Segawa, Takashi, 4,359,634, Cl. 250-201.000.

Sekiguchi, Tomozo; and Noguchi, Kazuma, to Pentel Kabushiki Kaisha. Writing instrument. 4,359,290, Cl. 401-32.000.

Sekine, Yoichi: *See*—
Nakagawa, Masami; Shimotsuma, Wataru; Kishimoto, Yoshio; and Sekine, Yoichi, 4,359,752, Cl. 346-140.00R.

Sella, Mario: *See*—
Simonotti, Lucio; and Sella, Mario, 4,359,630, Cl. 235-379.000.

Seneca Sawmill Company, Inc.: *See*—
Trudeau, Marcel R., deceased, 4,359,304, Cl. 414-37.000.

Seto, Haruo: *See*—
Mizutani, Taku; Yamagishi, Michio; Mizoue, Kazutoshi; Kawashima, Akira; Omura, Sadafumi; Otake, Noboru; and Seto, Haruo, 4,359,583, Cl. 549-343.000.

Shadmi, Gideon: *See*—
Amster, Micha; and Shadmi, Gideon, 4,359,205, Cl. 254-8.00B.

Shah, Hashmuk G.; and Machlan, G. Richard, to Owens-Corning Fiberglas Corporation. Method for forming filaments. 4,359,444, Cl. 264-518.000.

Sharp Kabushiki Kaisha: *See*—
Kunikane, Akihiko; Hashimoto, Shintaro; Teramura, Satoshi; Kobayashi, Kunihiro; and Iwase, Tetsuo, 4,359,730, Cl. 340-792.000.
Nonomura, Keisaku; Shimizu, Keiichiro; and Uede, Hisashi, 4,359,729, Cl. 340-765.000.

Shaw, Seth T., Jr. IUD Arrangement. 4,359,046, Cl. 128-130.000.

Shell Oil Company: *See*—
Bannon, Robert P., 4,359,380, Cl. 208-310.00Z.
Blytas, George C.; and Diaz, Zaida, 4,359,450, Cl. 423-226.000.
Brownscombe, Thomas F., 4,359,589, Cl. 568-618.000.
De La Mare, Harold E.; and Jones, Paul D., 4,359,370, Cl. 204-159.150.
den Otter, Gerrit J., 4,359,409, Cl. 252-455.00Z.
Hwo, Charles C.; and Martone, John A., 4,359,544, Cl. 524-232.000.
Schroeder, Carl W.; and Webster, Joseph R., 4,359,495, Cl. 428-35.000.
Schuurman, Pieter J.; and Teekens, Marius B., 4,359,448, Cl. 422-143.000.
Ten Haken, Pieter; and Webb, Shirley B., 4,359,576, Cl. 544-336.000.
Vinegar, Harold J.; and Waxman, Monroe H., 4,359,687, Cl. 324-366.000.

Shelton, James C.: *See*—
Reinhart, Franz K.; and Shelton, James C., 4,359,260, Cl. 350-96.120.

Shephard, Kevin E., to J & K Shepard Pty. Limited. Tactical indicator for bulkhead and other compasses. 4,359,629, Cl. 235-78.00N.

Sherman, Richard M.: *See*—
Kroll, Arthur T.; and Sherman, Richard M., 4,359,189, Cl. 239-121.000.

Shida, Mitsuzo: *See*—
Hoff, Raymond E.; Pullukat, Thomas J.; and Shida, Mitsuzo, 4,359,403, Cl. 252-429.00B.

Shigeru, Watanabe. Grindstone clearance correcting device for spring grinding machine. 4,358,912, Cl. 51-118.000.

Shim, Kyung S., to Stauffer Chemical Company. Process for the production of insoluble sulfur. 4,359,452, Cl. 423-567.00R.

Shimanski, Michael A.: *See*—
Mathias, Eckart; and Shimanski, Michael A., 4,359,429, Cl. 260-465.100.

Shimizu, Isamu; Shirai, Shigeru; and Inoue, Eiichi, to Canon Kabushiki Kaisha. Photoconductive member having barrier and depletion layers. 4,359,514, Cl. 430-65.000.

Shimizu, Keiichiro: *See*—
Nonomura, Keisaku; Shimizu, Keiichiro; and Uede, Hisashi, 4,359,729, Cl. 340-765.000.

Shimizu, Masami; Omi, Junji; Watanabe, Kunio; Uchidoi, Masanori; and Aizawa, Hiroshi, to Canon Kabushiki Kaisha. Camera with printed circuit boards comprising resistance-conductor laminated constructions. 4,359,277, Cl. 354-219.000.

Shimotsuma, Wataru: *See*—
Nakagawa, Masami; Shimotsuma, Wataru; Kishimoto, Yoshio; and Sekine, Yoichi, 4,359,752, Cl. 346-140.00R.

Shin-Etsu Chemical Co., Ltd.: *See*—
Takamizawa, Minoru; Okada, Fumio; Hara, Yasuaki; Aoki, Hsashi; and Inoue, Yoshio, 4,359,369, Cl. 204-159.130.

Shinoda, Tsutae; Andoh, Shizuo; Ueda, Yoichi; and Miyashita, Yoshinori, to Fujitsu Limited. Gas discharge panel having plurality of shift electrodes. 4,359,663, Cl. 313-217.000.

Shinoda, Yoshio; Kuno, Akira; and Matsui, Takeshi, to Nippon Soken, Inc. Electronic speed control system for vehicles. 4,359,125, Cl. 180-179.000.

Shionogi & Co., Ltd.: *See*—
Totani, Tetsushi; and Yamaguchi, Kenji, 4,359,425, Cl. 260-429.00R.

Shirai, Shigeru: *See*—
Fukuda, Tadaji; Shirai, Shigeru; and Kanbe, Junichiro, 4,359,512, Cl. 430-57.000.
Shimizu, Isamu; Shirai, Shigeru; and Inoue, Eiichi, 4,359,514, Cl. 430-65.000.

Shoichi, Sato, to Toa Electric Co., Ltd. Voice switching control system. 4,359,606, Cl. 179-1.0VC.

Shreve, James S. Engine auxiliary oiler. 4,359,140, Cl. 184-6.300.

Shudo, Yoshiro: *See*—
Takabatake, Hikaru; and Shudo, Yoshiro, 4,358,901, Cl. 34-57.00R.

Shuey, Kenneth C.: *See*—
Baker, Donal E.; and Shuey, Kenneth C., 4,359,681, Cl. 323-320.000.

SI Handling Systems, Inc.: *See*—
Nagahori, Katsuhiro, 4,358,999, Cl. 104-166.000.
Tokunaga, Kinjiro, 4,359,000, Cl. 104-166.000.
Sie, Tony: *See*—
Heinz, Lothar; Sie, Tony; and Burror, Robert, 4,359,642, Cl. 378-150.000.
Siemens Aktiengesellschaft: *See*—
Bohn, Josef; Lerch, Joachim; and Troltsch, Franz, 4,359,705, Cl. 335-213.000.
Grassl, Hans-Peter; Kleinschmidt, Peter; Herbst, Heiner; and Pfleiderer, Hans-Jorg, 4,359,274, Cl. 354-25.000.
Mueller, Lothar, 4,359,085, Cl. 165-47.000.
Mundel, Gerald, 4,359,649, Cl. 307-268.000.
Patalong, Hubert; and Krimmel, Eberhard F., 4,359,486, Cl. 427-53.100.
Sachs, Bertram; Borburgh, Jacques; and Feigt, Ingmar, 4,359,767, Cl. 367-105.000.
Schedele, Helmut, 4,359,703, Cl. 335-202.000.
Trinkl, Wolfgang, 4,359,647, Cl. 307-238.100.
Siemens Medical Laboratories, Inc.: *See*—
Heinz, Lothar; Sie, Tony; and Burror, Robert, 4,359,642, Cl. 378-150.000.
Siemionko, Roger K., to Du Pont de Nemours, E. I., and Company. Aromatic polyester and filaments. 4,359,569, Cl. 528-190.000.
Silberberg, Joseph, to Stauffer Chemical Company. Filled polyolefin compositions and filler material. 4,359,343, Cl. 106-308.00Q.
Silhouette, Jean-Max M., to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation, "S.N.E.C.M.A.". Weighted trigger device. 4,359,617, Cl. 200-153.00T.
Sills, Ronald A.; Katz, Daniel S.; and Singh, Balwant, to American Cyanamid Company. Process for trimerizing isocyanic acid to make cyanuric acid. 4,359,575, Cl. 544-192.000.
Silver Seiko, Ltd.: *See*—
Asahi, Tetsuma, 4,359,287, Cl. 400-166.000.
Silvester, Lenard F.: *See*—
Pope, William L.; Pines, Howard S.; Doyle, Padraic A.; and Silvester, Lenard F., 4,358,930, Cl. 60-647.000.
Silvestri, Giovanni J. High pressure air turbine and gear train system. 4,358,969, Cl. 74-785.000.
Simonotti, Lucio; and Sella, Mario, to Ing. C. Olivetti & C., S.p.A. Apparatus for depositing and/or withdrawing bank-notes by means of credit cards. 4,359,630, Cl. 235-379.000.
Singh, Balwant: *See*—
Sills, Ronald A.; Katz, Daniel S.; and Singh, Balwant, 4,359,575, Cl. 544-192.000.
Sinoff, Leonard. Display package for a combination fishing rod and reel assembly. 4,359,161, Cl. 206-315.00R.
Sipek, Charles B.: *See*—
Zankl, Frank; Sipek, Charles B.; and Cleek, Alvin L., 4,358,888, Cl. 29-568.000.
Sippican Corporation, The: *See*—
Washburn, Ralph G., 4,359,285, Cl. 374-172.000.
Skach, Edward J., Jr., to Dow Chemical Company, The. Salt removal from Mg granules. 4,359,344, Cl. 134-2.000.
Skuballa, Werner; Raduechel, Bernd; and Vorbrueggen, Helmut, to Schering AG. Process for the production of caracyclin intermediates. 4,359,581, Cl. 549-421.000.
Sloane, Nathan H., to University of Tennessee Research Corporation. Isolation of an antineoplastic protein fraction and an antineoplastic peptide fraction from human urine. 4,359,415, Cl. 260-112.00R.
Smith Engineering: *See*—
Smith, Jay, III; Karr, Gerald S.; and Jones, Lawrence T., 4,359,222, Cl. 273-85.00G.
Smith, Ian D.; Demeter, Laszlo J.; and Nielsen, Kurt E., to Physics International Company. Series diode X-ray source. 4,359,660, Cl. 378-119.000.
Smith International, Inc.: *See*—
Garner, Lloyd L.; Vincent, Joe W.; and Baker, William, III, 4,359,112, Cl. 175-329.000.
Garner, Lloyd L., 4,359,335, Cl. 75-208.00R.
Smith, Jay, III; Karr, Gerald S.; and Jones, Lawrence T., to Smith Engineering. Hand-held electronic game playing device with replaceable cartridges. 4,359,222, Cl. 273-85.00G.
Smith Kline & French Laboratories Limited: *See*—
Roantree, Michael L.; and Young, Rodney C., 4,359,466, Cl. 424-263.000.
Smith, Peter W., to United Technologies Corporation. Dual switch multimode array antenna. 4,359,742, Cl. 343-768.000.
Smith, Raymond, to Teledyne Industries, Inc. Turbine engine with shroud cooling means. 4,358,926, Cl. 60-39.830.
Smith, Robert R., to RCA Corporation. Anode assembly for electroforming record matrixes. 4,359,375, Cl. 204-212.000.
Smith, William S., to Dresser Industries, Inc. Shut-off apparatus for pneumatic driven tools. 4,359,107, Cl. 173-12.000.
SmithKline Beckman Corporation: *See*—
Weinstock, Joseph, 4,359,464, Cl. 424-285.000.
Smits, Johannes W.; and Timmermans, Franciscus A., to Internationale Octrooi Maatschappij "Octropa" B.V. Liquid smoke concentrate. 4,359,481, Cl. 426-533.000.
Snodgrass, Erlin E. Light energy concentrating device. 4,359,041, Cl. 126-424.000.
Snyder, Gene L.: *See*—
Gallusser, David O.; Snyder, Gene L.; Brush, Robert W.; and Joslyn, Carl R., 4,359,256, Cl. 339-90.00R.
Snyder Laboratories, Inc.: *See*—
Benjamin, Thomas A., 4,359,053, Cl. 128-339.000.
Societe Anonyme de Telecommunications: *See*—
Payen, Georges A., 4,359,718, Cl. 340-825.030.
Societe Nationale d'Etude et de Construction de Moteurs d'Aviation, "S.N.E.C.M.A.": *See*—
Silhouette, Jean-Max M., 4,359,617, Cl. 200-153.00T.
Soderman, Donald A.: *See*—
Heller, Lawrence G.; Jones, Harry J.; Kotecha, Harish N.; and Soderman, Donald A., 4,358,890, Cl. 29-571.000.
Sohio: *See*—
Wiggins, Wayne T.; and Gerry, Frank S., 4,359,506, Cl. 428-412.000.
Solomon, Marcel. Security buckle for wrist watch metal bracelets. 4,358,875, Cl. 24-190.000.
Sone, Kohki; and Okamura, Kenji, to Nissan Motor Company, Limited. System for feedback control of air/fuel ratio in IC engine with means to control supply of current to oxygen sensor. 4,359,030, Cl. 123-440.000.
Song, John S. Plant culture vessel. 4,358,908, Cl. 47-66.000.
Sony Corporation: *See*—
Aida, Kouichirou; Suzuki, Haruo; Kuwabara, Mitsuru; and Imaizumi, Yukio, 4,359,183, Cl. 229-52.00A.
Fukui, Hisao, 4,359,655, Cl. 307-595.000.
Sorrells, Frank D., to Cole National Corporation. Lens block. 4,358,913, Cl. 51-216.0LP.
Spain, Barry E.: *See*—
Schacht, Ezra L.; and Spain, Barry E., 4,359,645, Cl. 307-113.000.
Spannhake, Dieter; and Chwalkowski, Otto, to Robert Bosch GmbH. Picture tube demagnetizing coil arrangement. 4,359,707, Cl. 335-284.000.
Spector, George: *See*—
Valdez, Alfredo A.; and Spector, George, 4,359,722, Cl. 340-540.000.
Spensberger, Johann; and Fischer, Heinrich, to Carl Hurth Maschinen- und Zahnradfabrik GmbH & Co. Machine for the precision working, for example shaving, of tooth flanks. 4,359,301, Cl. 409-3.000.
Sperry Corporation: *See*—
de Jong, Joannes N. M., 4,358,954, Cl. 73-269.000.
McClellan, Thomas A., 4,359,283, Cl. 366-247.000.
Spillmann, Emilie, heir: *See*—
Spillmann, Werner, deceased; Spillmann, Emilie, heir; Scheffre nee Spillmann, Irene, heir; Spillmann, Rolf, heir; and Lehmann, Rolf, 4,358,993, Cl. 99-483.000.
Spillmann, Rolf, heir: *See*—
Spillmann, Werner, deceased; Spillmann, Emilie, heir; Scheffre nee Spillmann, Irene, heir; Spillmann, Rolf, heir; and Lehmann, Rolf, 4,358,993, Cl. 99-483.000.
Spillmann, Werner, deceased; by Spillmann, Emilie, heir; by Scheffre nee Spillmann, Irene, heir; by Spillmann, Rolf, heir; and Lehmann, Rolf, to Escher Wyss Limited. Apparatus for thermally treating a layer of material. 4,358,993, Cl. 99-483.000.
Spirk, John W.: *See*—
Nottingham, John R.; and Spirk, John W., 4,359,224, Cl. 273-115.000.
Sprayrite Manufacturing Co.: *See*—
Moore, John O., 4,359,188, Cl. 239-121.000.
Srivastava, Gopal K., to Zenith Radio Corporation. Gating network for a sampling circuit. 4,359,755, Cl. 358-21.00V.
Staal, Gerardus B.: *See*—
Henrick, Clive A.; and Staal, Gerardus B., 4,359,424, Cl. 549-416.000.
Stacy, Carl J.; and Wood, Jerold D., to Phillips Petroleum Company. Silica reinforced rubber. 4,359,342, Cl. 523-216.000.
Stadler, Henry L.: *See*—
Lambe, John J.; McCarthy, Shaun L.; and Stadler, Henry L., 4,359,698, Cl. 332-7.510.
Stahura, Richard P.: *See*—
Bowman, Michael A.; Frank, Steven R.; Stahura, Richard P.; and Swinderman, Robert T., 4,359,150, Cl. 198-497.000.
Standard Manufacturing Company, Incorporated: *See*—
Mankey, Harry S., 4,359,116, Cl. 180-6.480.
Standard Oil Company: *See*—
Dolhyj, Serge R.; Milberger, Ernest C.; and Bremer, Noel J., 4,359,407, Cl. 252-437.000.
Haas, Frederick W.; and Miloscia, William J., 4,359.402, Cl. 252-429.00B.
Stanfield, Charles K., to B & J Manufacturing Company. Tire trimmer. 4,358,893, Cl. 30-280.000.
Stangl, Walter, to Jenbacher Werke Aktiengesellschaft. Ignition device. 4,359,037, Cl. 123-643.000.
Staub, David E., to Concept Inc. Removable tip cautery. 4,359,052, Cl. 128-303.100.
Staufer, Adolf, to Fischer Gesellschaft m.b.H. Process and apparatus for forming a profiled tread surface on a ski. 4,359,077, Cl. 144-371.000.
Stauffer Chemical Company: *See*—
Magee, Walter L., Jr.; and Bayer, Arthur C., 4,359,431, Cl. 260-502.40R.
Shim, Kyung S., 4,359,452, Cl. 423-567.00R.
Silberberg, Joseph, 4,359,343, Cl. 106-308.00Q.
Stauffer, Norman L., to Honeywell Inc. Detector balance apparatus and method employing selective masks. 4,359,636, Cl. 250-204.000.
Stebens, Beverly B.: *See*—
Waters, Kenneth H.; Rice, George W.; Scanlan, Anthony J.; and Stebens, Beverly B., 4,359,766, Cl. 367-38.000.
Stecklein, Alfred L.; and Daugherty, Jerome M., to Gates Rubber Company, The. V-Belt. 4,359,355, Cl. 156-138.000.

Stein, Dieter; Bachl, Robert; and Richter, Konrad, to BASF Aktiengesellschaft. Process for producing ethylene polymers and copolymers by means of a supported catalyst of a chromium-hydrocarbon complex on an inorganic oxide carrier. 4,359,562, Cl. 526-129.000.
Steiner, Hans-Joachim: *See*—
Radtke, Gerd; Heerde, Klaus; Steiner, Hans-Joachim; and Mechelke, Klaus, 4,359,108, Cl. 173-15.000.
Stencel Aero Engineering Corporation: *See*—
Brevard, Ronald E.; Bradley, Gary F.; and Thomasson, F. Terry, 4,359,200, Cl. 244-122.0AG.
Stetter, Jog; Homeyer, Bernhard; and Hammann, Ingeborg, to Bayer Aktiengesellschaft. Combating pests with N-sulphenylated oximecarbamates. 4,359,469, Cl. 424-269.000.
Stetter, Jorg: *See*—
Kramer, Wolfgang; Buchel, Karl; Stetter, Jorg; Frohberger, Paul-Ernst; and Brandes, Wilhelm, 4,359,470, Cl. 424-269.000.
Stevens, Curtis R., to Master Specialties Corporation. Push button switch with self-indicating message display. 4,359,618, Cl. 200-314.000.
Stichting Rega V.Z.W.: *See*—
Heine, Jochen W., 4,359,389, Cl. 210-644.000.
Stirling, Irene; and Clarke, Brian P., to Beecham Group Limited. α-Amino deoxy clavulanic acid antibacterial agents. 4,359,473, Cl. 424-272.000.
Stock, Hugo: *See*—
Holthausen, Dieter; Henke, Klaus; Stock, Hugo; and Tholen, Paul, 4,359,026, Cl. 123-306.000.
Stoffel, John F., to Stoffel Seals Corporation. Unitary key holder. 4,358,944, Cl. 70-457.000.
Stoffel Seals Corporation: *See*—
Stoffel, John F., 4,358,944, Cl. 70-457.000.
Stoll, Joseph M.: *See*—
Gerding, Charles C.; Stoll, Joseph M.; and Majors, Harold L., 4,359,202, Cl. 249-109.000.
Stollorz, Herbert R. Removable storage module and module. 4,359,762, Cl. 360-98.000.
Stoltman, Donald D.; and Gifford, William E., to General Motors Corporation. Engine air flow responsive control. 4,359,031, Cl. 123-452.000.
Stora Kopparbergs Bergslags AB: *See*—
Bengtsson, Erik A.; Collin, Per H.; Flink, Sune N.; and Widell, Bjorn, 4,359,212, Cl. 266-172.000.
Stormon, Harry J.: *See*—
Gurries, Raymond A.; and Stormon, Harry J., 4,359,102, Cl. 172-40.000.
Stotz, Manfred, to Daimler-Benz A.G. Preliminary heating installation for glow plugs in air-compressing internal combustion engines. 4,359,020, Cl. 123-145.00A.
Strate, Ronald A.; Bills, Russell V.; and Anderson, James W. M. Carrier for blowout preventer. 4,359,089, Cl. 166-79.000.
Strick Corporation: *See*—
Johnson, James N., Jr., 4,359,307, Cl. 414-525.00R.
Stricklin, Douglas K.: *See*—
Young, Roy E.; and Stricklin, Douglas K., 4,359,305, Cl. 414-43.000.
Strohmaier, Ernst; Scheicher, Hans; and Eibofner, Eugen, to Kaltenbach & Voight GmbH & Co. Arrangement for conveying a sterile liquid to a surgical operating location. 4,359,317, Cl. 433-85.000.
Strzempko, Stanley J., to Texon Inc. Battery separator material. 4,359,511, Cl. 429-252.000.
Stubbs, Richard D.: *See*—
Fallon, Ray D.; and Stubbs, Richard D., 4,358,983, Cl. 89-1.806.
Sturwold, Robert J., to Cincinnati Vulcan Company, The. Water active metalworking lubricant compositions. 4,359,393, Cl. 252-34.700.
Suda, Yoshikazu; Nagano, Haruhisa; Miyata, Shigeyuki; and Yamori, Akio, to Asahi Kasei Kogyo Kabushiki Kaisha. Hot-melt pressure-sensitive adhesive composition containing an acid grafted block copolymer. 4,359,551, Cl. 524-271.000.
Suenaga, Kazuyuki, to Victor Company of Japan, Ltd. FM Demodulator for a plurality of carrier frequencies. 4,359,694, Cl. 329-103.000.
Sulesky, Robert A.: *See*—
Rogers, Howard G.; Eckert, Robert D.; Sahatjian, Ronald A.; and Sulesky, Robert A., 4,359,397, Cl. 252-194.000.
Sulzer Brothers Limited: *See*—
Gubler, Hans; and Hintsch, Otto, 4,358,940, Cl. 66-207.000.
Kohl, Karl, 4,358,939, Cl. 66-203.000.
Sumitomo Chemical Company, Limited: *See*—
Deguchi, Takashi; Usui, Masahiro; and Higashio, Yasuhiko, 4,359,365, Cl. 203-55.000.
Sunstar Hamigaki Kabushiki Kaisha: *See*—
Nakamura, Masakazu; and Hamato, Kikuko, 4,359,455, Cl. 424-7.000.
Suomen Sokeri Osakeyhtio: *See*—
Heikkila, Heikki O.; Melaja, Jaakko A.; Millner, Dan E. D.; and Virtanen, Jouko J., 4,359,430, Cl. 260-501.130.
Surface Technology, Inc.: *See*—
Feldstein, Nathan, 4,358,922, Cl. 57-401.000.
Feldstein, Nathan, 4,358,923, Cl. 57-401.000.
Surzyn, Piotr M.: *See*—
Wykes, John S.; Surzyn, Piotr M.; Croke, Gerard M.; and Adsley, Ian, 4,359,639, Cl. 250-359.100.
Suzuka, Kazuo, to Hitachi Denshi Kabushiki Kaisha. Bit buffer system. 4,359,770, Cl. 370-108.000.
Suzuki, Haruo: *See*—
Aida, Kouichirou; Suzuki, Haruo; Kuwabara, Mitsuru; and Imaizumi, Yukio, 4,359,183, Cl. 229-52.00A.
Suzuki, Masaki: *See*—
Matsumoto, Hisayuki; Ushijima, Seiichi; Kinoshita, Susumu; and Suzuki, Masaki, 4,359,657, Cl. 310-156.000.
Suzuki, Masatosi: *See*—
Sano, Hiromi; Suzuki, Masatosi; and Fujimoto, Masaya, 4,359,374, Cl. 204-195.00S.
Suzuki, Motoyoshi: *See*—
Ninoyu, Yutaka; and Suzuki, Motoyoshi, 4,359,124, Cl. 180-176.000.
Suzuki, Naohito: *See*—
Maruyama, Eisuke; Kobayashi, Hiromitsu; Mitsuhashi, Masakazu; Takeuchi, Hiromichi; Futamura, Yoshiki; and Suzuki, Naohito, 4,359,074, Cl. 141-000.
Svenskt Stal Aktiebolag: *See*—
Tiberg, Nils, 4,359,434, Cl. 264-7.000.
Swartz, Robert G.; Tien, Ping K.; and Wooley, Bruce A., to Bell Telephone Laboratories, Incorporated. Semiconductor lasers with selective driving circuit. 4,359,773, Cl. 372-26.000.
Sweet, Dale F. Placer mining apparatus. 4,359,383, Cl. 209-479.000.
Swinderman, Robert T.: *See*—
Bowman, Michael A.; Frank, Steven R.; Stahura, Richard P.; and Swinderman, Robert T., 4,359,150, Cl. 198-497.000.
Swiss Aluminium Ltd.: *See*—
Blanc, Jean M.; and Pfister, Hans, 4,359,377, Cl. 204-243.00M.
Syntex (U.S.A.) Inc.: *See*—
Walker, Keith A. M., 4,359,475, Cl. 424-273.00R.
Szadkowski, Andrzej: *See*—
Zukotynski, Stefan; Ma, Ki B.; Perz, John; Szadkowski, Andrzej; and Yacobi, Ben-Gur, 4,359,367, Cl. 204-37.00R.
Szmuszkovicz, Jacob: *See*—
Kaplan, Lester J.; McMillan, Moses W., and Szmuszkovicz, Jacob, 4,359,476, Cl. 424-274.000.
Taamal Mizra: *See*—
Amster, Micha; and Shadmi, Gideon, 4,359,205, Cl. 254-8.00B.
Tada, Yoshiharu; and Abe, Yoshiaki, to Alps Electric Company, Ltd. Auxiliary apparatus for starting a diesel engine. 4,359,643, Cl. 290-38.00R.
Taisho Pharmaceutical Co., Ltd.: *See*—
Mizutani, Taku; Yamagishi, Michio; Mizoue, Kazutoshi; Kawashima, Akira; Omura, Sadafumi; Otake, Noboru; and Seto, Haruo, 4,359,583, Cl. 549-343.000.
Takabatake, Hikaru; and Shudo, Yoshiro, to Yamato Kagaku Kabushiki Kaisha. Multipurpose basic apparatus for treating powders. 4,358,901, Cl. 34-57.00R.
Takahashi, Akira; Takase, Koyu; Kako, Hiroyoshi; and Kobayashi, Nobuo, to Toyota Jidosha Kogyo Kabushiki Kaisha. Triboelectric powder spraying gun. 4,359,192, Cl. 239-692.000.
Takahashi, Minoru, to TDK Electronics, Co. Ltd. Ultrasonic wave nebulizer driving circuit. 4,359,697, Cl. 331-116.00R.
Takahashi, Shigeru: *See*—
Hayashi, Hiromi; Takahashi, Shigeru; and Kawamura, Kazuo, 4,359,178, Cl. 226-25.000.
Takahashi, Yutaka: *See*—
Aihara, Mamoru; Takahashi, Yutaka; Nakajima, Yoshio; and Matsuura, Tsuyoshi, 4,359,273, Cl. 354-23.00D.
Takai, Akio T., to General Motors Corporation. Hook and pin hinged connection. 4,358,871, Cl. 16-262.000.
Takamasa, Suzuki, to Nippon Electric Co., Ltd. Integrated circuit having a plurality of current mode logic gates. 4,359,653, Cl. 307-455.000.
Takamizawa, Minoru; Okada, Fumio; Hara, Yasuaki; Aoki, Hsashi; and Inoue, Yoshio, to Shin-Etsu Chemical Co., Ltd. Photocurable organopolysiloxane compositions. 4,359,369, Cl. 204-159.130.
Takase, Koyu: *See*—
Takahashi, Akira; Takase, Koyu; Kako, Hiroyoshi; and Kobayashi, Nobuo, 4,359,192, Cl. 239-692.000.
Takase, Yoshiyuki: *See*—
Matsumoto, Jun-ichi; Takase, Yoshiyuki; and Nishimura, Yoshiro, 4,359,578, Cl. 544-362.000.
Takashima, Yuji: *See*—
Tsubusaki, Shigeru; and Takashima, Yuji, 4,359,238, Cl. 282-27.500.
Takazawa, Yuzuru: *See*—
Saito, Takeo; Nagaoka, Shinji; Takazawa, Yuzuru; and Segawa, Takashi, 4,359,634, Cl. 250-201.000.
Takeichi, Yasuo, to Daido Sangyo Co., Ltd. Preheater mounted within a well. 4,359,627, Cl. 219-523.000.
Takeuchi, Hiromichi: *See*—
Maruyama, Eisuke; Kobayashi, Hiromitsu; Mitsuhashi, Masakazu; Takeuchi, Hiromichi; Futamura, Yoshiki; and Suzuki, Naohito, 4,359,074, Cl. 141-94.000.
Takeuchi, Hiroo, to Nissin Kogyo Kabushiki Kaisha. Negative pressure booster. 4,358,990, Cl. 91-376.00R.
Taki, Yoichiro: *See*—
Ona, Isao; Ozaki, Masaru; and Taki, Yoichiro, 4,359,545, Cl. 524-262.000.
Talley, John D. Can flattener. 4,358,994, Cl. 100-45.000.
Talres Development (N.A.) N.V.: *See*—
Bucke, Christopher; and Cheetham, Peter S. J., 4,359,531, Cl. 435-97.000.
Tamura, Hideyuki: *See*—
Furuhashi, Shoji; Asano, Masaharu; and Tamura, Hideyuki, 4,359,029, Cl. 123-440.000.
Tanabe, Hirokuni; and Onodera, Masahiro, to Alps Electric Co., Ltd. Rotary variable resistor. 4,359,711, Cl. 338-134.000.

Taskier, Henry T., to Celanese Corporation. Hydrophilic polymer coated microporous membranes capable of use as a battery separator. 4,359,510, Cl. 429-144.000.

Taylor, Wilson G. Method for assisting bowlers in maintaining an optimum follow-through angle. 4,359,221, Cl. 273-54.00B.

TDK Electronics, Co. Ltd.: *See—*
Takahashi, Minoru, 4,359,697, Cl. 331-116.00R.

Teacherson, George. Holographic television. 4,359,758, Cl. 358-90.000.

Technicare Corporation: *See—*
McBride, Thomas R.; and Richey, Joseph B., 4,359,759, Cl. 358-111.000.

Technomadic Corporation: *See—*
Rait, Joseph M., 4,358,955, Cl. 73-295.000.

Teekens, Marius B.: *See—*
Schuurman, Pieter J.; and Teekens, Marius B., 4,359,448, Cl. 422-143.000.

Teledyne Industries, Inc.: *See—*
Smith, Raymond, 4,358,926, Cl. 60-39.830.

Teledyne Isotopes: *See—*
Lougheed, Victor R.; and McGrew, John W., 4,358,957, Cl. 374-134.000.

Teletype Corporation: *See—*
Waiss, John R., 4,359,179, Cl. 226-25.000.

Temme, Helmut, to Gewerkschaft Eisenhutte Westfalia. Scraper-chain conveyors for mineral mining. 4,359,154, Cl. 198-735.000.

Ten Haken, Pieter; and Webb, Shirley B., to Shell Oil Company. N-Pyrazinyl-N-benzylcarbamates, having fungicidal and plant growth regulating properties. 4,359,576, Cl. 544-336.000.

Teramura, Satoshi: *See—*
Kunikane, Akihiko; Hashimoto, Shintaro; Teramura, Satoshi; Kobayashi, Kunihiro; and Iwase, Tetsuo, 4,359,730, Cl. 340-792.000.

Terasawa, Masatoshi; Ishikawa, Hisashi; and Uemura, Takuo, to Lotte & Co., Ltd. Chewing gum containing an energy-rich phosphate compound. 4,359,479, Cl. 426-3.000.

Terlecky, Boris S.: *See—*
Brodeur, Rene H.; and Terlecky, Boris S., 4,359,001, Cl. 105-406.00R.

Terry, Lynn E.; and Schoeppel, Roger J. Power cycles based upon cyclical hydriding and dehydriding of material of a material. 4,358,931, Cl. 60-649.000.

Terry, Michael B.: *See—*
Hellums, James R.; and Terry, Michael B., 4,359,680, Cl. 323-313.000.

Tervet, Fred W.: *See—*
Harper-Tervet, Jan; Tervet, Fred W.; and Humphrey, Marshall F., 4,359,503, Cl. 428-367.000.

Texaco Inc.: *See—*
McEntire, Edward E.; and Dominquez, Richard J. G., 4,359,540, Cl. 521-129.000.
Patterson, John A.; Crawford, Wheeler C.; and Wilson, James R., 4,359,594, Cl. 585-434.000.

Texas Instruments Incorporated: *See—*
Di Pietro, Massimo, 4,358,982, Cl. 84-1.240.

Texogesa, S.A.: *See—*
Ohlsson, Jarl E. S. I., 4,358,996, Cl. 101-217.000.

Texon Inc.: *See—*
Strzempko, Stanley J., 4,359,511, Cl. 429-252.000.

Theodore, Ares N.: *See—*
Labana, Santokh S.; and Theodore, Ares N., 4,359,554, Cl. 525-386.000.

Thermasol, Ltd.: *See—*
Altman, Murray; and Bellasalma, Gerald J., 4,358,862, Cl. 4-542.000.

Thermo King Corporation: *See—*
Gainer, Gordon C.; Luck, Russell M.; and Grant, Hendrie J., 4,359,394, Cl. 252-54.000.

Thievessen, Karl; Weiss, Peter; and Schonmeier, Herbert, to Jagenberg Werke AG. Unwinding apparatus for rolls of material. 4,359,195, Cl. 242-68.000.

Thiokol Corporation: *See—*
Schneiter, Fred E.; and Cadwell, David C., 4,358,998, Cl. 102-530.000.

Third Wave Electronics Company, Inc.: *See—*
Davies, Ronald C., 4,359,148, Cl. 194-100.00A.

Tholen, Paul: *See—*
Holthausen, Dieter; Henke, Klaus; Stock, Hugo; and Tholen, Paul, 4,359,026, Cl. 123-306.000.

Thomas & Betts Corporation: *See—*
Hidassy, Laszlo; and Netta, Louis A., 4,359,070, Cl. 140-93.00A.

Thomas, Darwin E. Jaw set for snake mount. 4,359,320, Cl. 434-296.000.

Thomas, William L. Workpiece locator. 4,358,896, Cl. 33-181.00R.

Thomasson, F. Terry: *See—*
Brevard, Ronald E.; Bradley, Gary F.; and Thomasson, F. Terry, 4,359,200, Cl. 244-122.0AG.

Thompson, Harold R.; and Duval, Ernest H., to Gillette Company, The. Cosmetic dispenser. 4,359,292, Cl. 401-215.000.

Thomson-CSF: *See—*
Dumont, Francois, 4,359,604, Cl. 179-1.0SC.

Thomson, Graham S.; and Wittmann, Alois, to Hughes Aircraft Company. Payload deployment from shuttle with linear and angular velocity. 4,359,201, Cl. 244-158.00R.

Thyssen Industrie AG: *See—*
Miller, Luitpold, 4,359,247, Cl. 303-24.00R.

Tiberg, Nils, to Svenskt Stal Aktiebolag. Process for granulating molten material. 4,359,434, Cl. 264-7.000.

Tien, Ping K.; *See—*
Swartz, Robert G.; Tien, Ping K.; and Wooley, Bruce A., 4,359,773, Cl. 372-26.000.

Timmermans, Franciscus A.: *See—*
Smits, Johannes W.; and Timmermans, Franciscus A., 4,359,481, Cl. 426-533.000.

Tipton, Ann B., to Occidental Research Corporation. Desulfurization of carbonaceous materials. 4,359,451, Cl. 423-563.000.

TMC Corporation: *See—*
Wittmann, Heinz, 4,359,235, Cl. 280-605.000.

Toa Electric Co., Ltd.: *See—*
Shoichi, Sato, 4,359,606, Cl. 179-1.0VC.

Tokico Ltd.: *See—*
Maruyama, Eisuke; Kobayashi, Hiromitsu; Mitsuhashi, Masakazu; Takeuchi, Hiromichi; Futamura, Yoshiki; and Suzuki, Naohito, 4,359,074, Cl. 141-94.000.

Tokico Yuki Ltd.: *See—*
Maruyama, Eisuke; Kobayashi, Hiromitsu; Mitsuhashi, Masakazu; Takeuchi, Hiromichi; Futamura, Yoshiki; and Suzuki, Naohito, 4,359,074, Cl. 141-94.000.

Tokunaga, Kinjiro, to SI Handling Systems, Inc. Right angle conveyor system and vehicle for use therein. 4,359,000, Cl. 104-166.000.

Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Nakamura, Kiyoshi; Nakanishi, Masae; Kawasaki, Syozo; Ochiai, Toshihiko; and Nishida, Katsutoshi, 4,359,022, Cl. 123-188.0AA.

Tomori, Yasumasa, to Asahi Kogaku Kogyo Kabushiki Kaisha. Interchangeable lens barrel. 4,359,276, Cl. 354-195.000.

Toombs, Gary C.: *See—*
Gallusser, David O.; Hemmer, Valentine J.; and Toombs, Gary C., 4,359,254, Cl. 339-89.00M.

Toray Silicone Co., Ltd.: *See—*
Ona, Isao; Ozaki, Masaru; and Taki, Yoichiro, 4,359,545, Cl. 524-262.000.

Tordenmalm, L. Osten, to Akermans Verstad AB. Device for reducing piston velocity in a cylinder. 4,358,989, Cl. 91-361.000.

Tornoe, Robert N., to Varian Associates, Inc. Cylindrical cathode with segmented electron emissive surface and method of manufacture. 4,359,666, Cl. 313-302.000.

Totani, Tetsushi; and Yamaguchi, Kenji, to Shionogi & Co., Ltd. Organo-platinum complex. 4,359,425, Cl. 260-429.00R.

Toutant, Edward E., to International Business Machines Corporation. Single pass ribbon cartridge for impact printers having means to prevent incorrect insertion. 4,359,288, Cl. 400-208.000.

Townzen, David A.: *See—*
Goldschmidt, Robert E.; Ku, Charles C.; and Townzen, David A., 4,359,746, Cl. 346-33.00R.
Goldschmidt, Robert E.; Ku, Charles C.; and Townzen, David A., 4,359,747, Cl. 346-33.0TP.
Goldschmidt, Robert E.; Ku, Charles C.; and Townzen, David A., 4,359,751, Cl. 346-136.000.

Toyo Seikan Kaisha, Limited: *See—*
Hirota, Kazumi; Matsuoka, Kikuo; and Hori, Ichiro, 4,358,919, Cl. 53-453.000.

Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Sano, Hiromi; Suzuki, Masatosi; and Fujimoto, Masaya, 4,359,374, Cl. 204-195.00S.
Takahashi, Akira; Takase, Koyu; Kako, Hiroyoshi; and Kobayashi, Nobuo, 4,359,192, Cl. 239-692.000.
Ueno, Hideaki; and Noda, Fumiyoshi, 4,359,410, Cl. 252-463.000.

Trane Company, The: *See—*
Sanborn, Duane F.; Holman, John L. M.; and Ware, Chester D., 4,359,086, Cl. 165-133.000.

Traub, Alan C.: *See—*
Dostoomian, Ashod S.; Richard, Alan A.; Traub, Alan C.; and Vanzetti, Riccardo, 4,359,622, Cl. 219-110.000.

Tresselt, Carl P., to Bendix Corporation, The. Balancing network for microwave power combiner. 4,359,700, Cl. 333-136.000.

Triadu, Alain, to Allibert Exploitation, Societe Anonyme. Wood reinforced plastic-sheathed members, e.g. for boxes. 4,359,168, Cl. 220-73.000.

Trikilis, Emmanuel M. Turnstile. 4,358,909, Cl. 49-42.000.

Trinkl, Wolfgang, to Siemens Aktiengesellschaft. Master-slave flip-flop arrangement. 4,359,647, Cl. 307-238.100.

Triplett, James T. Floating crane apparatus. 4,359,164, Cl. 212-182.000.

Troltsch, Franz: *See—*
Bohn, Josef; Lerch, Joachim; and Troltsch, Franz, 4,359,705, Cl. 335-213.000.

Trott, Delano B., to Beringer Co., Inc. Flowable material passage with interposable slide member. 4,359,387, Cl. 210-352.000.

Troy, Daniel J., to Du Pont de Nemours, E. I., and Company. Dual-layer coating containing aluminum-flake pigment and coated article. 4,359,504, Cl. 428-403.000.

Trudeau, Claire, administratrix: *See—*
Trudeau, Marcel R., deceased, 4,359,304, Cl. 414-37.000.

Trudeau, Marcel R., deceased (by Trudeau, Claire, administratrix), to Seneca Sawmill Company, Inc. Board separator. 4,359,304, Cl. 414-37.000.

Truong-Cao, Hung-Viet, to Hughes Tool Company. Impactor drill tool. 4,359,109, Cl. 173-111.000.

TRW Inc.: *See—*
Palecek, Vincent J.; and Berg, B. Alan, 4,359,258, Cl. 339-176.0MP.

Tsubusaki, Shigeru; and Takashima, Yuji, to Matsushita Electric Industrial Co., Ltd. Image-receiving sheet. 4,359,238, Cl. 282-27.500.

Tsugawa, Kazuo: *See*—
Mimura, Katsura; and Tsugawa, Kazuo, 4,359,765, Cl. 361-147.000.
Tsuji, Masao; and Ichihara, Yoshihiro, to Kuraray Co., Ltd. Microbial process for producing cholanic acid derivatives. 4,359,529, Cl. 435-52.000.
Tsunoda, Masakazu, to Nissan Motor Company, Limited. Voice warning system with automatic volume adjustment for an automotive vehicle. 4,359,713, Cl. 340-52.00F.
Tsunoda, Masakazu; and Mori, Kazuyuki, to Nissan Motor Company, Limited. Voice warning system for an automotive vehicle. 4,359,714, Cl. 340-52.00F.
Tuccio, Sam A.: *See*—
Hammond, Willis B.; Bigeleisen, Jacob; and Tuccio, Sam A., 4,359,368, Cl. 204-158.00R.
Tucker, Trevor W.; Conway, Larry J.; and Bouchard, Sylvain L., to Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence. Microwave storage device. 4,359,690, Cl. 328-151.000.
Tuell Industries, Inc.: *See*—
Tuell, James L., 4,358,972, Cl. 81-145.000.
Tuell, James L., to Tuell Industries, Inc. Self adjusting wrench. 4,358,972, Cl. 81-145.000.
Turek & Heller Machine, Inc.: *See*—
Brandli, John R., 4,358,977, Cl. 83-319.000.
Turillon, Pierre P.; Hull, Michael N.; and Nordblom, George F., to International Nickel Company, Inc., The; and ESB Corporation. Method of producing battery and electrolytic cell electrodes. 4,358,892, Cl. 29-623.500.
Tuttle, Lawrence L.: *See*—
Baczek, Frank A.; Wojcik, Bruce C.; Jueschke, Alexander A.; Lewis, Daniel M.; Otto, Jack C.; and Tuttle, Lawrence L., 4,359,376, Cl. 204-242.000.
Tyndale Plains-Hunter, Ltd.: *See*—
Gould, Francis E.; and Johnston, Christian W., 4,359,558, Cl. 525-454.000.
UBE Industries, Ltd.: *See*—
Yajima, Seishi; Okamura, Kiyohito; Hasegawa, Yoshio; and Yamamura, Takemi, 4,359,559, Cl. 525-475.000.
Uchida, Kazuo, to Diesel Kiki Co., Ltd. Double-injection type fuel injection valve. 4,359,191, Cl. 239-533.500.
Uchidoi, Masanori: *See*—
Shimizu, Masami; Omi, Junji; Watanabe, Kunio; Uchidoi, Masanori; and Aizawa, Hiroshi, 4,359,277, Cl. 354-219.000.
Uchikawa, Fusaoki, to Mitsubishi Denki Kabushiki Kaisha. Self-cleaning plate. 4,359,039, Cl. 126-19.00R.
Udono, Jun, to Nissan Motor Co., Ltd. Hydraulic booster. 4,358,991, Cl. 91-470.000.
Uecker, Richard P.; Horvath, Stephen J.; and Larkin, Francis C., to Brandt, Inc. Electronic coin dispenser. 4,359,062, Cl. 133-2.000.
Ueda, Yoichi: *See*—
Shinoda, Tsutae; Andoh, Shizuo; Ueda, Yoichi; and Miyashita, Yoshinori, 4,359,663, Cl. 313-217.000.
Ueda, Yoshihiro; Sasao, Hiroyuki; Yoshiyasu, Hajimu; and Okuda, Soichiro, to Mitsubishi Denki Kabushiki Kaisha. Self-extinguishing switch. 4,359,616, Cl. 200-148.00A.
Uede, Hisashi: *See*—
Nonomura, Keisaku; Shimizu, Keiichiro; and Uede, Hisashi, 4,359,729, Cl. 340-765.000.
Uemura, Takuo: *See*—
Terasawa, Masatoshi; Ishikawa, Hisashi; and Uemura, Takuo, 4,359,479, Cl. 426-3.000.
Ueno, Hideaki; and Noda, Fumiyoshi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Process of producing a catalyst carrier. 4,359,410, Cl. 252-463.000.
Umezawa, Hamao; Umezawa, Sumio; Fukatsu, Shunzo; and Yoneta, Toshio, to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai. Process for the production of 3'-deoxykanamycin A and intermediate product. 4,359,572, Cl. 536-13.800.
Umezawa, Sumio: *See*—
Umezawa, Hamao; Umezawa, Sumio; Fukatsu, Shunzo; and Yoneta, Toshio, 4,359,572, Cl. 536-13.800.
Uni-Cardan Aktiengesellschaft: *See*—
Krude, Wernre, 4,359,128, Cl. 180-258.000.
Union Carbide Canada Limited: *See*—
Cleminson, John H.; Bowman, Brian R.; and Lauge, Raitis, 4,359,442, Cl. 264-280.000.
Union Carbide Corporation: *See*—
Fraser, William A.; Maraschin, Norma J.; Karol, Frederick J.; and Makai, Alexander J., 4,359,561, Cl. 526-88.000.
Wilson, Peter H., 4,359,328, Cl. 55-26.000.
Union Oil Co. of California: *See*—
Bernard, George G., 4,359,093, Cl. 166-273.000.
Union Rheinische Braunkohlen Kraftstoff Aktiengesellschaft: *See*—
Fremery, Max; Keim, Karl-Heinz; and Korff, Joachim, 4,359,591, Cl. 568-804.000.
Uniroyal, Ltd.: *See*—
Liebermann, George; and Hager, Frederick M. M., 4,359,579, Cl. 549-14.000.
U.S. Fire Control Corporation: *See*—
Johnson, Wilfred V., 4,359,098, Cl. 169-90.000.
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Agriculture: *See*—
Kurtzman, Cletus P.; Bothast, Rodney J.; and VanCauwenberge, James E., 4,359,534, Cl. 435-161.000.
Air Force: *See*—
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Evers, Robert C., 4,359,567, Cl. 528-179.000.
Harris, Herbert M.; and Hill, Gerald N., 4,359,360, Cl. 156-345.000.
Horner, Joseph L.; and Ludman, Jacques E., 4,359,259, Cl. 350-3.700.
Kramer, Louis T.; Butler, Franklin H.; and Camino, Anthony V., 4,359,199, Cl. 244-100.00R.
Levi, Mark W., 4,359,261, Cl. 350-96.140.
MacFarland, James M.; and Kappe, Bernard W., 4,358,949, Cl. 73-23.000.
Marvel, Carl S.; and Sankaran, Venkatesa, 4,359,568, Cl. 528-183.000.
Newcomb, Robert E., 4,359,650, Cl. 307-270.000.
Pagano, Nicholas J., 4,359,190, Cl. 239-265.110.
Williams, Raymond L., 4,358,925, Cl. 60-39.070.
Army: *See*—
Bond, John W., 4,359,737, Cl. 343-18.00A.
DeSantis, Charles M., 4,359,743, Cl. 343-792.000.
Fox, Clifton S.; Fox, Jay A.; and Barr, Dallas N., 4,359,777, Cl. 372-61.000.
Energy: *See*—
Franks, Larry A.; and Lutz, Stephen S., 4,359,641, Cl. 250-486.100.
Laidler, James J.; Borisch, Ronald R.; and Korenko, Michael K., 4,359,350, Cl. 148-12.300.
Merrick, Howard F.; and Korenko, Michael K., 4,359,349, Cl. 148-12.300.
Paterson, James A.; and Koehler, Gary W., 4,359,667, Cl. 313-348.000.
Pope, William L.; Pines, Howard S.; Doyle, Padraic A.; and Silvester, Lenard F., 4,358,930, Cl. 60-647.000.
Watson, Bobby L.; and Aeby, Ian, 4,359,608, Cl. 179-15.55R.
Wilke, Charles R.; Maiorella, Brian L.; Blanch, Harvey W.; and Cysewski, Gerald R., 4,359,533, Cl. 435-161.000.
National Aeronautics and Space Administration: *See*—
Harper-Tervet, Jan; Tervet, Fred W.; and Humphrey, Marshall F., 4,359,503, Cl. 428-367.000.
Navy: *See*—
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Kim, Oh-Kil; and Fox, Robert B., 4,359,411, Cl. 252-500.000.
Lewis, Bernard L.; and Kretschmer, Frank F., Jr., 4,359,735, Cl. 343-17.2PC.
Lewis, Bernard L., 4,359,736, Cl. 343-17.2PC.
Lewis, Bernard L., 4,359,738, Cl. 343-100.0LE.
U.S. Philips Corporation: *See*—
Acket, Gerard A.; de Waard, Peter J.; Khoe, Giok D.; Wirtz, Gijsbrecht C.; and Rozzi, Tullio E., 4,359,776, Cl. 372-46.000.
Cassel, Knut E., 4,359,741, Cl. 343-754.000.
Gross, Ulrich, 4,359,635, Cl. 250-201.000.
Horstmann, Hans W., 4,359,157, Cl. 206-328.000.
United Technologies Corporation: *See*—
Smith, Peter W., 4,359,742, Cl. 343-768.000.
University of Tennessee Research Corporation: *See*—
Sloane, Nathan H., 4,359,415, Cl. 260-112.00R.
University of Toronto, Governing Council of the: *See*—
Zukotynski, Stefan; Ma, Ki B.; Perz, John; Szadkowski, Andrzej; and Yacobi, Ben-Gur, 4,359,367, Cl. 204-37.00R.
University Patents, Inc.: *See*—
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Kaplan, Lester J.; McMillan, Moses W.; and Szmuszkovicz, Jacob, 4,359,476, Cl. 424-274.000.
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Uranit Uran-Isotopentrennungsgesellschaft mbH: *See*—
Kornbichler, Heinz; Sartor, Bruno; and Rode, Klaus, 4,359,356, Cl. 156-175.000.
Ury, Michael G., to Fusion Systems Corporation. Method and apparatus for igniting electrodeless discharge lamp. 4,359,668, Cl. 315-39.000.
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Matsumoto, Hisayuki; Ushijima, Seiichi; Kinoshita, Susumu; and Suzuki, Masaki, 4,359,657, Cl. 310-156.000.
Ushio Denki Kabushikikaisha: *See*—
Onishi, Yasuo, 4,359,662, Cl. 313-213.000.
Ushio, Masaru; Morita, Tohru; and Ishii, Takeshi, to Nippon Oil Company, Ltd. Process for fluid catalytic cracking of distillation residual oils. 4,359,379, Cl. 208-120.000.
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Deguchi, Takashi; Usui, Masahiro; and Higashio, Yasuhiko, 4,359,365, Cl. 203-55.000.
Vajta, Laszlo: *See*—
Balogh, Gyorgy; Hajnal, Miklos; Vajta, Laszlo; Lovanyi, Istvan; and Csenki, Laszlo, 4,359,725, Cl. 340-576.000.
Valdez, Alfredo A.; and Spector, George. Earthquake detection system with pendulum switch. 4,359,722, Cl. 340-540.000.
VanCauwenberge, James E.: *See*—
Kurtzman, Cletus P.; Bothast, Rodney J.; and VanCauwenberge, James E., 4,359,534, Cl. 435-161.000.
Van Fisk, James, Jr., to NL Industries, Inc. Bentonite clay and water soluble aluminum salt compositions. 4,359,339, Cl. 106-38.300.
VanKirk, Raymond J. Atmospheric air intake apparatus for coolers. 4,358,934, Cl. 62-180.000.
Van Natta, Terry L., to Deere & Company. Soil working implement including hydraulic centering and locking means for caster wheel. 4,359,105, Cl. 172-386.000.

VanZandt, Mordecai M. Apparatus for tenderizing meat. 4,358,872, Cl. 17-1.00R.

Vanzetti Infrared & Computer Systems, Inc.: *See*—
Dostoomian, Ashod S.; Richard, Alan A.; Traub, Alan C.; and Vanzetti, Riccardo, 4,359,622, Cl. 219-110.000.

Vanzetti, Riccardo: *See*—
Dostoomian, Ashod S.; Richard, Alan A.; Traub, Alan C.; and Vanzetti, Riccardo, 4,359,622, Cl. 219-110.000.

Varian Associates, Inc.: *See*—
Tornoe, Robert N., 4,359,666, Cl. 313-302.000.

Varta Batterie Aktiengesellschaft: *See*—
d'Arcy, Rainer-Lionel; and Schmidt, Hartmut, 4,359,071, Cl. 141-1.000.

Vaughan, Hugh R. Auger assembly moving device. 4,359,117, Cl. 180-11.000.

VEB Werkzeugkombinat Schmalkalden: *See*—
Radtke, Gerd; Heerde, Klaus; Steiner, Hans-Joachim; and Mechelke, Klaus, 4,359,108, Cl. 173-15.000.

Victor Company of Japan, Ltd.: *See*—
Haramoto, Yutaka; and Kikuchi, Mitsuru, 4,359,605, Cl. 179-1.0GP.
Suenaga, Kazuyuki, 4,359,694, Cl. 329-103.000.

Viehe, Heinz G.: *See*—
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Vinals, Joaquin F.: *See*—
Schreck, Ronald P.; Light, Kenneth K.; Hall, John B.; Schmitt, Frederick L.; Vock, Manfred H.; Schreiber, William L.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,359,395, Cl. 252-174.110.

Vincent, Joe W.: *See*—
Garner, Lloyd L.; Vincent, Joe W.; and Baker, William. III, 4,359,112, Cl. 175-329.000.

Vinegar, Harold J.; and Waxman, Monroe H., to Shell Oil Company. Method and apparatus for determining shaliness and oil saturations in earth formations using induced polarization in the frequency domain. 4,359,687, Cl. 324-366.000.

Vinick, Fredric J., to Pfizer Inc. Process for preparing L-carnosine. 4,359,416, Cl. 260-112.50R.

Virtanen, Jouko J.: *See*—
Heikkila, Heikki O.; Melaja, Jaakko A.; Millner, Dan E. D.; and Virtanen, Jouko J., 4,359,430, Cl. 260-501.130.

Vivitar Corporation: *See*—
Ballo, James A.; and Constable, Charles F., 4,358,995, Cl. 100-98.00R.

Vivlamore, Samantha L.: *See*—
Myers, Donald W.; and Vivlamore, Samantha L., 4,359,160, Cl. 206-519.000.

Vock, Manfred H.: *See*—
Schreck, Ronald P.; Light, Kenneth K.; Hall, John B.; Schmitt, Frederick L.; Vock, Manfred H.; Schreiber, William L.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,359,395, Cl. 252-174.110.

Vogelsanger, Emil, to Reishauer AG. Machine for relief grinding tap threads. 4,358,911, Cl. 51-94.0CS.

Voigt, Reiner: *See*—
Puppe, Lothar; Voigt, Reiner; Borgardt, Manfred; Moretto, Hans-Heinrich; and Munchenbach, Bernard, 4,359,565, Cl. 528-15.000.

Volkswagenwerk Aktiengesellschaft: *See*—
Fiala, Ernst, 4,359,028, Cl. 123-350.000.

Vollmer, Hans-Peter: *See*—
Marschall, Peter; Petermann, Klaus; Schlosser, Ewald; Vollmer, Hans-Peter; and Wolk, Claus, 4,359,775, Cl. 372-45.000.

Vollmer, Heinz: *See*—
Fritsch, Gunter; Vollmer, Heinz; and Schmitz, Walter, 4,359,439, Cl. 264-135.000.

Vorbrueggen, Helmut: *See*—
Skuballa, Werner; Raduechel, Bernd; and Vorbrueggen, Helmut, 4,359,581, Cl. 549-421.000.

Vorbruggen, Helmut; Schwarz, Norbert; Loge, Olaf; and Elger, Walter, to Schering Aktiengesellschaft. Prostanoic acid derivatives and their preparation. 4,359,467, Cl. 424-263.000.

W. R. Grace & Co.: *See*—
LePage, James N., 4,359,323, Cl. 23-230.00M.
Mathias, Eckart; and Shimanski, Michael A., 4,359,429, Cl. 260-465.100.
Murch, Robert M.; and Eagan, John J., 4,358,899, Cl. 34-15.000.

Wacker-Chemie GmbH: *See*—
Kratel, Gunter; and Katzer, Hans, 4,359,496, Cl. 428-75.000.
More, Anton, 4,359,337, Cl. 75-257.000.

Wade, Calvin E., to General Motors Corporation. Engine camshaft and piston lubrication. 4,359,018, Cl. 123-90.340.

Waghorne, Robert H.: *See*—
Howard, Kent A.; Mitchell, Howard L.; and Waghorne, Robert H., 4,359,596, Cl. 585-856.000.

Wagman, Gerald H.: *See*—
Weinstein, Marvin J.; Wagman, Gerald H.; Marquez, Joseph A.; and Patel, Mahesh G., 4,359,462, Cl. 424-181.000.

Wagner, Wayne M.; and Winnes, David E., to Donaldson Company, Inc. Muffler assembly. 4,359,135, Cl. 181-266.000.

Waiss, John R., to Teletype Corporation. Apparatus for detecting a malfunction in the paper feed system of a printer. 4,359,179, Cl. 226-25.000.

Waldo, Paul D.: *See*—
Barnes, Johnny G.; and Waldo, Paul D., 4,359,286, Cl. 400-70.000.

Walker, Edith. Nail polish dispensing apparatus. 4,359,060, Cl. 132-75.000.

Walker, Gerhard: *See*—
Fasterding, Henning; Franz, Herbert; and Walker, Gerhard, 4,359,656, Cl. 310-68.00R.

Walker, Keith A. M., to Syntex (U.S.A.) Inc. Thioketal substituted N-alkyl imidazoles. 4,359,475, Cl. 424-273.00R.

Walters, Charles W.: *See*—
Merz, Ernest J.; and Walters, Charles W., 4,359,137, Cl. 182-2.000.

Walters, Harry J.: *See*—
Gerben, Ralph D.; and Walters, Harry J., 4,359,153, Cl. 198-621.000.

Walworth, Vivian K., to Polaroid Corporation. Method for forming a photosensitive silver halide element. 4,359,526, Cl. 430-568.000.

Wang, Shiang-Fu: *See*—
Ikunosuke, Fukuda; Pan, Jen-Csung; and Wang, Shiang-Fu, 4,359,174, Cl. 222-131.000.

Ward, James F.; and Gilbert, Lawrence A., to Procter & Gamble Company, The. Solid detergent compositions containing alpha-amine oxide surfactants. 4,359,413, Cl. 252-527.000.

Ward, Robert W.: *See*—
Goudie, Alexander C.; and Ward, Robert W., 4,359,423, Cl. 548-427.000.

Ware, Chester D.: *See*—
Sanborn, Duane F.; Holman, John L. M.; and Ware, Chester D., 4,359,086, Cl. 165-133.000.

Wascat, Raymond, to Bignier Schmid-Laurent. Welding apparatus with automatic following of the joint to be welded. 4,359,624, Cl. 219-124.340.

Washburn, Ralph G., to Sippican Corporation, The. Temperature measurement system. 4,359,285, Cl. 374-172.000.

Watanabe, Katsunori: *See*—
Katagiri, Kazuharu; Watanabe, Katsunori; Ohta, Shigeto; Ishikawa, Shozo; and Kitahara, Makoto, 4,359,513, Cl. 430-58.000.
Katagiri, Kazuharu; Watanabe, Katsunori; Ohta, Shigeto; Ishikawa, Shozo; and Kitahara, Makoto, 4,359,515, Cl. 430-70.000.

Watanabe, Kunio: *See*—
Shimizu, Masami; Omi, Junji; Watanabe, Kunio; Uchidoi, Masanori; and Aizawa, Hiroshi, 4,359,277, Cl. 354-219.000.

Waters, Kenneth H.; Rice, George W.; Scanlan, Anthony J.; and Stebens, Beverly B. Method for reconnaissance geophysical prospecting. 4,359,766, Cl. 367-38.000.

Watkins, Kenneth R.; and Dean, Leron R., to Eastman Kodak Company. Process for producing low pilling textile fiber and product of the process. 4,359,557, Cl. 525-437.000.

Watson, Bobby L.; and Aeby, Ian, to United States of America, Energy. Adaptive sampler. 4,359,608, Cl. 179-15.55R.

Watts, Golden F.: *See*—
Hoggins, James T.; and Watts, Golden F., 4,359,438, Cl. 264-105.000.

Waxman, Monroe H.: *See*—
Vinegar, Harold J.; and Waxman, Monroe H., 4,359,687, Cl. 324-366.000.

Weaver, Max A.: *See*—
Davis, Thomas G.; and Weaver, Max A., 4,359,570, Cl. 528-289.000.

Webb, Frederick A.; and Doerr, Richard E., to Conoco Inc. Method and apparatus for the filling of a slurry sump. 4,359,298, Cl. 406-3.000.

Webb, Shirley B.: *See*—
Ten Haken, Pieter; and Webb, Shirley B., 4,359,576, Cl. 544-336.000.

Webb, William M.: *See*—
Losert, Gehard K.; and Webb, William M., 4,358,935, Cl. 62-188.000.

Webster, Joseph R.: *See*—
Schroeder, Carl W.; and Webster, Joseph R., 4,359,495, Cl. 428-35.000.

Wehrenberg, Charles C. Attachable, level-correcting volumeter and stand for round bottom flasks. 4,358,958, Cl. 73-428.000.

Weichel, Ernst. Attachment combination for agricultural tractors. 4,359,100, Cl. 172-30.000.

Weidmann, Erich: *See*—
Loepfe, Erich; Weidmann, Erich; and Schumperli, Walter, 4,359,068, Cl. 139-370.200.

Weind, Walter D.: *See*—
Mejia, Ezequiel; Minaki, Peter S.; and Weind, Walter D., 4,359,646, Cl. 307-116.000.

Weinstein, Marvin J.; Wagman, Gerald H.; Marquez, Joseph A.; and Patel, Mahesh G., to Schering Corporation. Antibiotic 67-121, a new polyene antifungal antibiotic produced by *Actinoplanes caeruleus*. 4,359,462, Cl. 424-181.000.

Weinstock, Joseph, to SmithKline Beckman Corporation. 3-Furylmethyl-6-halo-7,8-dihydroxy-1-phenyl-2,3,4,5-tetrahydro-1H-3-benzazepines and antihypertensive use thereof. 4,359,464, Cl. 424-285.000.

Weiss, Peter: *See*—
Thievessen, Karl; Weiss, Peter; and Schonmeier, Herbert, 4,359,195, Cl. 242-68.000.

Welch, Henry H. Automatic multichannel apparatus for performing emergency analyses, in particular chemical-clinical analyses on biological fluids. 4,359,447, Cl. 422-63.000.

Wells, Michael: *See*—
Lockwood, Lawrence B.; Wells, Michael; and Charmasson, Henri J. A., 4,359,631, Cl. 235-381.000.

Wescom Switching, Inc.: *See*—
Regan, John F., 4,359,679, Cl. 323-272.000.

West, Frank: *See—*
Gavagan, James A.; Gulette, Ronald S.; Petersen, Carl M., III; West, Frank; and Brennan, William E., 4,359,237, Cl. 280-806.000.

Western Electric Company, Inc.: *See—*
Fanning, William J., 4,359,623, Cl. 219-111.000.
Henderson, Joseph G.; Markham, Alan S.; and Neumyer, Richard D., 4,359,436, Cl. 264-40.600.
Woods, William L., Jr., 4,358,961, Cl. 73-827.000.

Westinghouse Electric Corp.: *See—*
Baker, Donal E.; and Shuey, Kenneth C., 4,359,681, Cl. 323-320.000.
Benner, Henry F., 4,359,599, Cl. 174-94.00R.
Bluzer, Nathan, 4,359,651, Cl. 307-311.000.
Jackson, Leigh F., 4,359,143, Cl. 187-52.00R.
Monley, Robert E., 4,359,621, Cl. 219-60.200.

Weyerhaeuser Company: *See—*
Young, Roy E.; and Stricklin, Douglas K., 4,359,305, Cl. 414-43.000.

Wherry, Kenneth. Metal detection apparatus with basket. 4,359,686, Cl. 324-326.000.

Wick, Gerhard: *See—*
Gerlach, Klaus; and Wick, Gerhard, 4,359,359, Cl. 156-294.000.

Widell, Bjorn: *See—*
Bengtsson, Erik A.; Collin, Per H.; Flink, Sune N.; and Widell, Bjorn, 4,359,212, Cl. 266-172.000.

Wiggins, Wayne T.; and Gerry, Frank S., to Sohio. Tie layer for co-extruded acrylonitrile copolymers. 4,359,506, Cl. 428-412.000.

Wikstroom, Bo: *See—*
Raivola, Pertti; Wikstroom, Bo; and Kaskinen, Pellervo, 4,359,678, Cl. 323-211.000.

Wilder, Arthur H.: *See—*
Belentepe, Yilmaz C.; Lee, Li-Chung; and Wilder, Arthur H., 4,359,042, Cl. 126-443.000.

Wilhelm, Gary, to Llama Gabilondo y. Cia. S.A. Semiautomatic hand gun having an elongated take down pin. 4,358,987, Cl. 89-196.000.

Wilke, Charles R.; Maiorella, Brian L.; Blanch, Harvey W.; and Cysewski, Gerald R., to United States of America, Energy. Fermentative alcohol production. 4,359,533, Cl. 435-161.000.

Wilkinson, Bernard H., to Rolls-Royce Limited. Manufacture and inspection of an article. 4,358,882, Cl. 29-156.80H.

Willeitner, Eberhard, to M.A.N. Maschinenfabrik Augsburg-Nurnburg A.G. Oil separator for compressors of heat pumps and chillers. 4,359,329, Cl. 55-186.000.

Williams, Donald L., to General Motors Corporation. Rod operated valve. 4,359,204, Cl. 251-331.000.

Williams, Raymond L., to United States of America, Air Force. Temperature sensing assembly. 4,358,925, Cl. 60-39.070.

Williams, Shelly R. Tube holder-dispenser. 4,359,173, Cl. 222-100.000.

Wilson, James R.: *See—*
Patterson, John A.; Crawford, Wheeler C.; and Wilson, James R., 4,359,594, Cl. 585-434.000.

Wilson, Peter H., to Union Carbide Corporation. Inverted pressure swing adsorption process. 4,359,328, Cl. 55-26.000.

Winblad, Nils, to Aktiebolaget Bofors. Protective device for combat vehicle with gun barrel. 4,358,984, Cl. 89-36.00H.

Winnes, David E.: *See—*
Wagner, Wayne M.; and Winnes, David E., 4,359,135, Cl. 181-266.000.

Winslow, Phillip D., to Hewlett-Packard Company. Method and apparatus for testing the output reflection coefficient of an automatic level controlled source. 4,359,682, Cl. 324-58.00B.

Winstead, Maynard R., to General Electric Company. Coating composition adapted for electric generators. 4,359,338, Cl. 106-14.130.

Winston, Roland, to University Patents, Inc. Controlled directional scattering cavity for tubular absorbers. 4,359,265, Cl. 350-296.000.

Wirtz, Gijsbrecht C.: *See—*
Acket, Gerard A.; de Waard, Peter J.; Khoe, Giok D.; Wirtz, Gijsbrecht C.; and Rozzi, Tullio E., 4,359,776, Cl. 372-46.000.

Wittmann, Alois: *See—*
Thomson, Graham S.; and Wittmann, Alois, 4,359,201, Cl. 244-158.00R.

Wittmann, Heinz, to TMC Corporation. Ski brake. 4,359,235, Cl. 280-605.000.

Woeber, Clarence E. Device for small cylindrical and for penetratable objects. 4,359,240, Cl. 294-24.000.

Wojcik, Bruce C.: *See—*
Baczek, Frank A.; Wojcik, Bruce C.; Jueschke, Alexander A.; Lewis, Daniel M.; Otto, Jack C.; and Tuttle, Lawrence L., 4,359,376, Cl. 204-242.000.

Wolk, Claus: *See—*
Marschall, Peter; Petermann, Klaus; Schlosser, Ewald; Vollmer, Hans-Peter; and Wolk, Claus, 4,359,775, Cl. 372-45.000.

Wolters, Erich: *See—*
Dieterich, Dieter; Blank, Heinz U.; Wolters, Erich; and Langenfeld, Norbert, 4,359,426, Cl. 260-453.0AR.

Wood, Jerold D.: *See—*
Stacy, Carl J.; and Wood, Jerold D., 4,359,342, Cl. 523-216.000.

Woods, William L., Jr., to Western Electric Company, Inc. Methods and apparatus for testing rupture strength of tubular parts. 4,358,961, Cl. 73-827.000.

Wooley, Bruce A.: *See—*
Swartz, Robert G.; Tien, Ping K.; and Wooley, Bruce A., 4,359,773, Cl. 372-26.000.

World Health Organization: *See—*
Hoffman, Allan S., 4,359,454, Cl. 424-5.000.

Wright, Donald R., to Dow Chemical Company, The. Impulse sealer. 4,359,361, Cl. 156-497.000.

Wu, M. T.: *See—*
Chai, Thomas Y.; Reisch, Franz S.; and Wu, M. T., 4,359,720, Cl. 340-365.00C.

Wykes, John S.; Surzyn, Piotr M.; Croke, Gerard M.; and Adsley, Ian, to Coal Industry (Patents) Limited. Method of and apparatus for determining the nature of transported material. 4,359,639, Cl. 250-359.100.

Xerox Corporation: *See—*
Appel, James J., 4,359,267, Cl. 350-320.000.
Garavuso, Gerald M., 4,359,219, Cl. 271-236.000.
Marshall, Richard C., 4,359,753, Cl. 346-153.100.
Roller, George J.; and Prats, Danny J., 4,359,217, Cl. 271-186.000.

Xiberas, Andre, to Groupement d'Interet Economique de Recherches et de Developpement PSA. Electronic ignition-coil control device for an internal combustion engine. 4,359,038, Cl. 123-644.000.

Yacobi, Ben-Gur: *See—*
Zukotynski, Stefan; Ma, Ki B.; Perz, John; Szadkowski, Andrzej; and Yacobi, Ben-Gur, 4,359,367, Cl. 204-37.00R.

Yajima, Seishi; Okamura, Kiyohito; Hasegawa, Yoshio; and Yamamura, Takemi, to UBE Industries, Ltd. Novel polymetallocarbosilane, and process for its production. 4,359,559, Cl. 525-475.000.

Yamagishi, Michio: *See—*
Mizuiani, Taku; Yamagishi, Michio; Mizoue, Kazutoshi; Kawashima, Akira; Omura, Sadafumi; Otake, Noboru; and Seto, Haruo, 4,359,583, Cl. 549-343.000.

Yamaguchi, Kenji: *See—*
Totani, Tetsushi; and Yamaguchi, Kenji, 4,359,425, Cl. 260-429.00R.

Yamamoto, Kazushi: *See—*
Nagai, Takeshi; Yamamoto, Kazushi; and Kobayashi, Ikuo, 4,359,372, Cl. 204-192.00F.

Yamamura, Takemi: *See—*
Yajima, Seishi; Okamura, Kiyohito; Hasegawa, Yoshio; and Yamamura, Takemi, 4,359,559, Cl. 525-475.000.

Yamato Kagaku Kabushiki Kaisha: *See—*
Takabatake, Hikaru; and Shudo, Yoshiro, 4,358,901, Cl. 34-57.00R.

Yamori, Akio: *See—*
Suda, Yoshikazu; Nagano, Haruhisa; Miyata, Shigeyuki; and Yamori, Akio, 4,359,551, Cl. 524-271.000.

Yanagawa, Nobuyuki: *See—*
Hosaka, Masao; and Yanagawa, Nobuyuki, 4,359,670, Cl. 315-307.000.

Yarmashev, Jury N.: *See—*
Rusanov, Alexander I.; Gavrilov, Vitaly P.; Yarmashev, Jury N.; Arbuzov, Pavel M.; and Levit, Nadezhda M., 4,359,058, Cl. 130-27.00Z.

Yoneta, Toshio: *See—*
Umezawa, Hamao; Umezawa, Sumio; Fukatsu, Shunzo; and Yoneta, Toshio, 4,359,572, Cl. 536-13.800.

Yoshida, Masaru: *See—*
Kaetsu, Isao; and Yoshida, Masaru, 4,359,483, Cl. 427-2.000.

Yoshiyasu, Hajimu: *See—*
Ueda, Yoshihiro; Sasao, Hiroyuki; Yoshiyasu, Hajimu; and Okuda, Soichiro, 4,359,616, Cl. 200-148.00A.

Youle, Richard J.: *See—*
Neville, David M., Jr.; and Youle, Richard J., 4,359,457, Cl. 424-85.000.

Young, Rodney C.: *See—*
Roantree, Michael L.; and Young, Rodney C., 4,359,466, Cl. 424-263.000.

Young, Roy E.; and Stricklin, Douglas K., to Weyerhaeuser Company. Method and apparatus for accumulating and dispensing tray-like objects. 4,359,305, Cl. 414-43.000.

Zahnradfabrik Friedrichshafen Aktiengesellschaft: *See—*
Huff, Martin, 4,359,145, Cl. 192-112.000.
Partzel, Karl-Heinz, 4,358,945, Cl. 72-12.000.

Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai: *See—*
Umezawa, Hamao; Umezawa, Sumio; Fukatsu, Shunzo; and Yoneta, Toshio, 4,359,572, Cl. 536-13.800.

Zankl, Frank; Sipek, Charles B.; and Cleek, Alvin L., to Kearney & Trecker Corporation. Automatic tool changer with internal tool storage magazine. 4,358,888, Cl. 29-568.000.

Zeeh, Bernd: *See—*
Ammermann, Eberhard; Zeeh, Bernd; Hamprecht, Gerhard; and Pommer, Ernst-Heinrich, 4,359,471, Cl. 424-269.000.

Zeigler, Philip B.; and Moore, David W., to General Motors Corporation. Antiglare rear view mirror assembly. 4,359,263, Cl. 350-281.000.

Zeigler, Philip B.; and Moore, David W., to General Motors Corporation. Antiglare rear view mirror assembly. 4,359,264, Cl. 350-281.000.

Zeliszkewycz, Stefan. Continuous flow fuel injector for internal combustion engines. 4,359,025, Cl. 123-275.000.

Zenith Radio Corporation: *See—*
Lee, Ronald B., 4,359,778, Cl. 375-13.000.
Srivastava, Gopal K., 4,359,755, Cl. 358-21.00V.

Zetter, Bruce R., to Children's Hospital Medical Center, The. Cancer diagnostic assay. 4,359,527, Cl. 435-29.000.

Zikonix Corporation: *See—*
Allport, John J., 4,359,638, Cl. 378-50.000.

Zimmer, John C. Security method and apparatus. 4,358,941, Cl. 70-229.000.

Zimmerman, Lawrence. Skid for stacking hay bales. 4,359,306, Cl. 414-44.000.

Zimmerman, Ronald R.; and Bartky, W. Scott, to Zimmerman, Ronald R. Eyelid movement detector. 4,359,724, Cl. 340-575.000.

Zoecon Corporation: *See—*
Henrick, Clive A.; and Staal, Gerardus B., 4,359,424, Cl. 549-416.000.

Zukotynski, Stefan; Ma, Ki B.; Perz, John; Szadkowski, Andrzej; and Yacobi, Ben-Gur, to University of Toronto, Governing Council of the. Silicon-based semiconductor devices. 4,359,367, Cl. 204-37.00R.

Zumtobel KG: *See—*
Funke, Herbert; and Riggenmann, Hans-Jurgen, 4,359,312, Cl. 417-18.000.

Zuppichini, Sebastian: *See—*
Colognori, Aldo, 4,358,876, Cl. 24-211.00R.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 16TH DAY OF NOVEMBER, 1982

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Baxter Travenol Laboratories, Inc.: *See—*
Winchell, David A., Re. 31,082, Cl. 215-232.000.

Bendix Corporation, The: *See—*
Gaiser, Robert F., Re. 31,080, Cl. 60-562.000.

DeKeersmaecker, Roger F.; DiMaria, Donelli J.; and Young, Donald R., to International Business Machines Corporation. Non-volatile memory devices fabricated from graded or stepped energy band gap insulator MIM or MIS structure. Re. 31,083, Cl. 357-54.000.

DiMaria, Donelli J.: *See—*
DeKeersmaecker, Roger F.; DiMaria, Donelli J.; and Young, Donald R., Re. 31,083, Cl. 357-54.000.

Gaiser, Robert F., to Bendix Corporation, The. Master cylinder. Re. 31,080, Cl. 60-562.000.

Hitachi, Ltd.: *See—*
Nagasawa, Kouichi; Kosa, Yasunobu; and Meguro, Satoshi, Re. 31,079, Cl. 29-571.000.

International Business Machines Corporation: *See—*
DeKeersmaecker, Roger F.; DiMaria, Donelli J.; and Young, Donald R., Re. 31,083, Cl. 357-54.000.

Keep, Henry, Jr. Railroad switch heater. Re. 31,081, Cl. 246-428.000.

Kosa, Yasunobu: *See—*
Nagasawa, Kouichi; Kosa, Yasunobu; and Meguro, Satoshi, Re. 31,079, Cl. 29-571.000.

Meguro, Satoshi: *See—*
Nagasawa, Kouichi; Kosa, Yasunobu; and Meguro, Satoshi, Re. 31,079, Cl. 29-571.000.

Nagasawa, Kouichi; Kosa, Yasunobu; and Meguro, Satoshi, to Hitachi, Ltd. Method for manufacturing complementary insulated gate field effect transistors. Re. 31,079, Cl. 29-571.000.

Winchell, David A., to Baxter Travenol Laboratories, Inc. Hermetically sealed tamperproof port protector. Re. 31,082, Cl. 215-232.000.

Young, Donald R.: *See—*
DeKeersmaecker, Roger F.; DiMaria, Donelli J.; and Young, Donald R., Re. 31,083, Cl. 357-54.000.

LIST OF DESIGN PATENTEES

Ackeret, Peter. Portable box for storing tape cassette containers. 266,883, 11-16-82, Cl. D3-35.000.

Agfa - Gevaert AG: *See—*
Schultes, Herbert; and Rubner, Karl-Heinz, 266,930, Cl. D16-6.000.

Agrimonti, Ronald J. Coil spring compressing tool. 266,900, 11-16-82, Cl. D8-14.000.

Almarin Canada Ltd.: *See—*
Luhtala, Antti J., 266,880, Cl. D2-185.000.

American Commercial Incorporated: *See—*
Everhan, Walter, 266,891, Cl. D7-18.000.

American Standard Inc.: *See—*
Stairs, Henry M., Jr., 266,941, Cl. D23-55.000.
Teffeau, Lewis, 266,933, Cl. D19-3.000.

Arnoldware-Rogers (Canada) LTEE: *See—*
Guerette, Richard, 266,906, Cl. D9-453.000.

Asics Corporation: *See—*
Ueno, Yoshio, 266,881, Cl. D2-309.000.
Ueno, Yoshio, 266,882, Cl. D2-320.000.

Baisch, Herbert: *See—*
Ferdinand, Irwin J.; Sylvan, Richard; and Baisch, Herbert, 266,901, Cl. D8-71.000.

Balleraud, Pierre, to Paco Rabanne Parfums. Perfume dispenser. 266,961, 11-16-82, Cl. D28-91.100.

Bannwart, Rene: *See—*
Schwab, Jean-Claude; and Bannwart, Rene, 266,908, Cl. D10-39.000.
Schwab, Jean-Claude; and Bannwart, Rene, 266,909, Cl. D10-39.000.

Barr, Josef J. Pendant or similar article. 266,912, 11-16-82, Cl. D11-79.000.

Barton, Catherine M., to Quaker Oats Company, The. Rolling toy animal figure. 266,938, 11-16-82, Cl. D21-148.000.

Bauman, William A., to Enger-Kress Company. Wallet. 266,884, 11-16-82, Cl. D3-56.000.

Bell, Gordon D.: *See—*
Hellinger, David L.; Bell, Gordon D.; Brown, Gregory N.; Kennedy, Robert J., Jr.; and Smith, Kendall S., II, 266,895, Cl. D7-394.000.
Hellinger, David L.; Bell, Gordon D.; Brown, Gregory N.; Kennedy, Robert J., Jr.; and Smith, Kendall S., II, 266,896, Cl. D7-393.000.

Bell Telephone Laboratories, Incorporated: *See—*
Illium, Herbert C., Jr.; Korby, Kenneth L.; and McGarvey, John N., 266,927, Cl. D14-55.000.

Bennett, Brian S., to Dunlop Limited. Tire for a vehicle wheel. 266,919, 11-16-82, Cl. D12-146.000.

Benoit, Lucien E.; and Brosseau, Rosario. Device for loading logs. 266,898, 11-16-82, Cl. D23-138.500.

Bersten, Ian J. Beverage filter holder. 266,894, 11-16-82, Cl. D7-400.000.

Blue Feather Products, Inc.: *See—*
King, Feather W., 266,934, Cl. D19-75.000.

Brammell, Howard F. Combined golf club and fishing rod. 266,939, 11-16-82, Cl. D21-215.000.

Brickwood, Alan, to Molehurst Limited. Road stud. 266,910, 11-16-82, Cl. D10-113.000.

Brosseau, Rosario: *See—*
Benoit, Lucien E.; and Brosseau, Rosario, 266,898, Cl. D23-138.500.

Brown, Gregory N.: *See—*
Hellinger, David L.; Bell, Gordon D.; Brown, Gregory N.; Kennedy, Robert J., Jr.; and Smith, Kendall S., II, 266,895, Cl. D7-394.000.
Hellinger, David L.; Bell, Gordon D.; Brown, Gregory N.; Kennedy, Robert J., Jr.; and Smith, Kendall S., II, 266,896, Cl. D7-393.000.

Brunson, Gene; and Douglas, Paul. Mirror toy. 266,936, 11-16-82, Cl. D21-59.000.

Buczak, Fredric J. Pedal driven vehicle. 266,918, 11-16-82, Cl. D12-112.000.

Bunker Ramo Corporation: *See—*
Coppola, John B.; and Ferrara, James R., 266,929, Cl. D14-106.000.

Candiliotis, Gerassimos C., to Uniroyal, Inc. Pneumatic tire tread and buttress. 266,920, 11-16-82, Cl. D12-147.000.

Condon, Richard W.: *See—*
Stewart, Charles; and Condon, Richard W., 266,917, Cl. D12-7.000.

Cooper, Dale E.; Grillot, Ronald E.; Quick, Gary K.; and Smith, Kevin R., to King Radio Corporation. Electrical connector. 266,925, 11-16-82, Cl. D13-24.000.

Coppola, John B.; and Ferrara, James R., to Bunker Ramo Corporation. CRT Data terminal with magnetic card reader. 266,929, 11-16-82, Cl. D14-106.000.

Corum, Ries, Bannwart & Co.: *See—*
Schwab, Jean-Claude; and Bannwart, Rene, 266,908, Cl. D10-39.000.
Schwab, Jean-Claude; and Bannwart, Rene, 266,909, Cl. D10-39.000.

Dahlgren, Britt I. Toy water canal sections. 266,937, 11-16-82, Cl. D21-59.000.

Del Principe, Robert M.; and Mayer, Edward, to Mattel, Inc. Housing for electronic game. 266,935, 11-16-82, Cl. D21-13.000.

de Ronde, Frederick L. A.: *See—*
Kritz, Orville H.; and de Ronde, Frederick L. A., 266,956, Cl. D26-28.000.

Douglas, Paul: *See—*
Brunson, Gene; and Douglas, Paul, 266,936, Cl. D21-59.000.

Dunlop Limited: *See—*
Bennett, Brian S., 266,919, Cl. D12-146.000.

Earnest, Virgil L. Nut cracker. 266,893, 11-16-82, Cl. D7-98.000.

Enger-Kress Company: *See—*
Bauman, William A., 266,884, Cl. D3-56.000.

Everhan, Walter, to American Commercial Incorporated. Tureen. 266,891, 11-16-82, Cl. D7-18.000.

Ferdinand, Irwin J.; Sylvan, Richard; and Baisch, Herbert, to Hirsh Company. Portable circular power saw support. 266,901, 11-16-82, Cl. D8-71.000.

Ferrara, James R.: *See—*
Coppola, John B.; and Ferrara, James R., 266,929, Cl. D14-106.000.

Fisher, John. Door assembly for wood stoves. 266,944, 11-16-82, Cl. D23-128.000.

Florists' Transworld Delivery Association: *See—*
Kaufmann, Donald A., 266,916, Cl. D11-164.000.

Ford, Margie M. Bacon cooker. 266,892, 11-16-82, Cl. D7-359.000.

Franks, Larrabee: *See—*
Harvey, Francis K.; Franks, Larrabee; and Ingraham, David L., 266,959, Cl. D27-08.000.

Frechtman, Jean, to Jeanmarie Gallery, Inc. Pedestal frame. 266,889, 11-16-82, Cl. D6-232.000.

Freding, Karl B. Wire gate latch. 266,904, 11-16-82, Cl. D8-338.000.

Gernhardt, Paul D., to Slater Electric Inc. Portable indirect lighting fixture for office partitions or the like. 266,958, 11-16-82, Cl. D26-92.000.

Gillette Company, The: *See—*
Gray, Michael J.; and Trotta, Robert A., 266,960, Cl. D28-48.000.

Goldhaber, Marvin L. Door frame member. 266,949, 11-16-82, Cl. D25-74.000.

Goldhaber, Marvin L. Window frame member. 266,950, 11-16-82, Cl. D25-74.000.

Goldhaber, Marvin L. Door edge member. 266,951, 11-16-82, Cl. D25-74.000.

Goldhaber, Marvin L. Z-Shaped window frame member. 266,952, 11-16-82, Cl. D25-74.000.

Goldhaber, Marvin L. H-Shaped window frame member. 266,953, 11-16-82, Cl. D25-74.000.

Gordan, Miroslav. Illuminated display. 266,954, 11-16-82, Cl. D26-24.000.

Goteborgs Tra och Metall: *See—*
Salen, Sven, 266,907, Cl. D10-6.000.

Gray, Michael J.; and Trotta, Robert A., to Gillette Company, The. Razor handle. 266,960, 11-16-82, Cl. D28-48.000.

Greenberg, S. Robert. Soundfocuser. 266,945, 11-16-82, Cl. D24-35.000.

Grillot, Ronald E.: *See—*
Cooper, Dale E.; Grillot, Ronald E.; Quick, Gary K.; and Smith, Kevin R., 266,925, Cl. D13-24.000.

Guerette, Richard, to Arnoldware-Rogers (Canada) LTEE. Container lid. 266,906, 11-16-82, Cl. D9-453.000.

Hachtmann, William R.; and Knight, Arlen M. Fabric cleaning head. 266,962, 11-16-82, Cl. D32-33.000.

Harold Moore (Plastics) Holdings Limited: *See—*
Moore, David; and Wilson, Harry E., 266,899, Cl. D8-10.000.

Harvey, Francis K.; Franks, Larrabee; and Ingraham, David L. Disposable ashtray. 266,959, 11-16-82, Cl. D27-08.000.

Hazelton, Bruce J. Planter. 266,913, 11-16-82, Cl. D11-147.000.

Hellinger, David L.; Bell, Gordon D.; Brown, Gregory N.; Kennedy, Robert J., Jr.; and Smith, Kendall S., II, to Lincoln Manufacturing Co., Inc. Holder for a stockpot handle. 266,895, 11-16-82, Cl. D7-394.000.

Hellinger, David L.; Bell, Gordon D.; Brown, Gregory N.; Kennedy, Robert J., Jr.; and Smith, Kendall S., II, to Lincoln Manufacturing Co., Inc. Holder for a utensil lid handle. 266,896, 11-16-82, Cl. D7-393.000.

Hirsh Company: *See—*
Ferdinand, Irwin J.; Sylvan, Richard; and Baisch, Herbert, 266,901, Cl. D8-71.000.

Illium, Herbert C., Jr.; Korby, Kenneth L.; and McGarvey, John N., to Bell Telephone Laboratories, Incorporated. Coin telephone set enclosure. 266,927, 11-16-82, Cl. D14-55.000.

Ingraham, David L.: *See—*
Harvey, Francis K.; Franks, Larrabee; and Ingraham, David L., 266,959, Cl. D27-08.000.

Jeanmarie Gallery, Inc.: *See—*
Frechtman, Jean, 266,889, Cl. D6-232.000.

Joffe, Richard M.: *See—*
Miller, Paul D.; Penney, Richard; and Joffe, Richard M., 266,931, Cl. D16-12.000.

Kaufmann, Donald A., to Florists' Transworld Delivery Association. Cover for plant pots or the like. 266,916, 11-16-82, Cl. D11-164.000.

Kennedy, Robert J., Jr.: *See—*
Hellinger, David L.; Bell, Gordon D.; Brown, Gregory N.; Kennedy, Robert J., Jr.; and Smith, Kendall S., II, 266,895, Cl. D7-394.000.
Hellinger, David L.; Bell, Gordon D.; Brown, Gregory N.; Kennedy, Robert J., Jr.; and Smith, Kendall S., II, 266,896, Cl. D7-393.000.

King, Feather W., to Blue Feather Products, Inc. Holder for retaining small metal objects magnetically. 266,934, 11-16-82, Cl. D19-75.000.

King Radio Corporation: *See—*
Cooper, Dale E.; Grillot, Ronald E.; Quick, Gary K.; and Smith, Kevin R., 266,925, Cl. D13-24.000.

Knight, Arlen M.: *See—*
Hachtmann, William R.; and Knight, Arlen M., 266,962, Cl. D32-33.000.

Korby, Kenneth L.: *See—*
Illium, Herbert C., Jr.; Korby, Kenneth L.; and McGarvey, John N., 266,927, Cl. D14-55.000.

Kritz, Orville H.; and de Ronde, Frederick L. A., to Per-Lux, Inc. Vehicle lamp. 266,956, 11-16-82, Cl. D26-28.000.

Kvittingen, Johs. Abduction splint. 266,948, 11-16-82, Cl. D24-64.000.

Lee, Jackey K. W., to Lomack Industrial Co. Limited. Lantern. 266,957, 11-16-82, Cl. D26-48.000.

Lincoln Manufacturing Co., Inc.: *See—*
Hellinger, David L.; Bell, Gordon D.; Brown, Gregory N.; Kennedy, Robert J., Jr.; and Smith, Kendall S., II, 266,895, Cl. D7-394.000.
Hellinger, David L.; Bell, Gordon D.; Brown, Gregory N.; Kennedy, Robert J., Jr.; and Smith, Kendall S., II, 266,896, Cl. D7-393.000.

Liset, Magna O. Spectacle holder. 266,932, 11-16-82, Cl. D16-129.000.

Lomack Industrial Co. Limited: *See—*
Lee, Jackey K. W., 266,957, Cl. D26-48.000.

Luhtala, Antti J., to Almarin Canada Ltd. Jacket. 266,880, 11-16-82, Cl. D2-185.000.

Mason & Porter Limited: *See—*
Porter, Terence F., 266,943, Cl. D23-105.000.

Mattel, Inc.: *See—*
Del Principe, Robert M.; and Mayer, Edward, 266,935, Cl. D21-13.000.

Mayer, Edward: *See—*
Del Principe, Robert M.; and Mayer, Edward, 266,935, Cl. D21-13.000.

McGarvey, John N.: *See—*
Illium, Herbert C., Jr.; Korby, Kenneth L.; and McGarvey, John N., 266,927, Cl. D14-55.000.

Metzinger, Marlene A. Sculptural air balloon attachment for a gift basket. 266,915, 11-16-82, Cl. D11-163.000.

Miller, Daniel R., to Nestier Corporation. Tray for growing plant seedlings. 266,914, 11-16-82, Cl. D11-155.000.

Miller, Paul D.; Penney, Richard; and Joffe, Richard M., to View-Master International Group. Compact viewer. 266,931, 11-16-82, Cl. D16-12.000.

Molehurst Limited: *See—*
Brickwood, Alan, 266,910, Cl. D10-113.000.

Moore, David; and Wilson, Harry E., to Harold Moore (Plastics) Holdings Limited. Shovel. 266,899, 11-16-82, Cl. D8-10.000.

Nestier Corporation: *See—*
Miller, Daniel R., 266,914, Cl. D11-155.000.

Paco Rabanne Parfums: *See—*
Balleraud, Pierre, 266,961, Cl. D28-91.100.

Parks, Edgar L.; and Parks, Greig H. Ventilating hatch. 266,923, 11-16-82, Cl. D12-317.000.

Parks, Greig H.: *See—*
Parks, Edgar L.; and Parks, Greig H., 266,923, Cl. D12-317.000.

Parry, Alan C. Hood covering for truck tractors. 266,921, 11-16-82, Cl. D12-173.000.

Penney, Richard: *See—*
Miller, Paul D.; Penney, Richard; and Joffe, Richard M., 266,931, Cl. D16-12.000.

Per-Lux, Inc.: *See—*
Kritz, Orville H.; and de Ronde, Frederick L. A., 266,956, Cl. D26-28.000.

Pfanstiehl, John G. Picture frame. 266,890, 11-16-82, Cl. D6-242.000.

Porter, Terence F., to Mason & Porter Limited. Space heater. 266,943, 11-16-82, Cl. D23-105.000.

Quaker Oats Company, The: *See—*
Barton, Catherine M., 266,938, Cl. D21-148.000.

Quaker Stove Co., Inc.: *See—*
Rennels, Cyril L., 266,942, Cl. D23-97.000.

Quick, Gary K.: *See—*
Cooper, Dale E.; Grillot, Ronald E.; Quick, Gary K.; and Smith, Kevin R., 266,925, Cl. D13-24.000.

Rasheed, Abdullah K. Combined ladder bucket and brush holder. 266,964, 11-16-82, Cl. D32-54.000.

Reid, Robert G., to Willows Reed Products Limited. Combined fruit and vegetable cutter. 266,897, 11-16-82, Cl. D7-147.000.

Rennels, Cyril L., to Quaker Stove Co., Inc. Coal stove. 266,942, 11-16-82, Cl. D23-97.000.

Reynolds Metals Company: *See—*
Reynolds, William G., deceased, 266,922, Cl. D12-180.000.

Reynolds, William G., deceased, to Reynolds Metals Company. Brake drum. 266,922, 11-16-82, Cl. D12-180.000.

Roper Corporation: *See—*
Stewart, Charles; and Condon, Richard W., 266,917, Cl. D12-7.000.

Roslan, Gertrude P. Infant's bathtub seat. 266,940, 11-16-82, Cl. D23-52.000.

Rozsnyai, John W. Table. 266,886, 11-16-82, Cl. D6-146.000.

Rubner, Karl-Heinz: *See—*
Schultes, Herbert; and Rubner, Karl-Heinz, 266,930, Cl. D16-6.000.

Salen, Sven, to Goteborgs Tra och Metall. Guitar-shaped clock. 266,907, 11-16-82, Cl. D10-6.000.

Sassmannshausen, Knut O. Signal light for a vehicle. 266,955, 11-16-82, Cl. D26-28.000.

Schultes, Herbert; and Rubner, Karl-Heinz, to Agfa - Gevaert AG. Combined camera and electronic flash unit. 266,930, 11-16-82, Cl. D16-6.000.

Schwab, Jean-Claude; and Bannwart, Rene, to Corum, Ries, Bannwart & Co. Wristwatch. 266,908, 11-16-82, Cl. D10-39.000.

Schwab, Jean-Claude; and Bannwart, Rene, to Corum, Ries, Bannwart & Co. Wristwatch. 266,909, 11-16-82, Cl. D10-39.000.

Schweiger Industries, Inc.: *See—*
Ungaro, Nicholas A., 266,887, Cl. D6-177.000.
Ungaro, Nicholas A., 266,888, Cl. D6-179.000.

Sherman, David L. Garbage disposal tool. 266,963, 11-16-82, Cl. D32-35.000.

Slater Electric Inc.: *See—*
Gernhardt, Paul D., 266,958, Cl. D26-92.000.

Smith, Kendall S., II: *See*—
Hellinger, David L.; Bell, Gordon D.; Brown, Gregory N.; Kennedy, Robert J., Jr.; and Smith, Kendall S., II, 266,895, Cl. D7-394.000.
Hellinger, David L.; Bell, Gordon D.; Brown, Gregory N.; Kennedy, Robert J., Jr.; and Smith, Kendall S., II, 266,896, Cl. D7-393.000.
Smith, Kevin R.: *See*—
Cooper, Dale E.; Grillot, Ronald E.; Quick, Gary K.; and Smith, Kevin R., 266,925, Cl. D13-24.000.
Stairs, Henry M., Jr., to American Standard Inc. Bathtub or similar article. 266,941, 11-16-82, Cl. D23-55.000.
Stewart, Charles; and Condon, Richard W., to Roper Corporation. Power driven ski vehicle. 266,917, 11-16-82, Cl. D12-7.000.
Strandfelt, Bo. Combined terminal socket and casing therefor. 266,924, 11-16-82, Cl. D13-24.000.
Sylvan, Richard: *See*—
Ferdinand, Irwin J.; Sylvan, Richard; and Baisch, Herbert, 266,901, Cl. D8-71.000.
Tarran, Phil K. Combination axe and metal cutter device. 266,902, 11-16-82, Cl. D8-76.000.
Tarran, Phil K. Combination axe and basher-adz device. 266,903, 11-16-82, Cl. D8-76.000.
Teffeau, Lewis, to American Standard Inc. Envelope blank or the like. 266,933, 11-16-82, Cl. D19-3.000.
Thomas, Wesley L. Telephone. 266,926, 11-16-82, Cl. D14-53.000.
Topete, Lino Z. Swimming pool and spa combination. 266,946, 11-16-82, Cl. D24-38.000.
Topete, Lino Z. Swimming pool and spa combination. 266,947, 11-16-82, Cl. D24-38.000.
Trotta, Robert A.: *See*—
Gray, Michael J.; and Trotta, Robert A., 266,960, Cl. D28-48.000.
Ueno, Yoshio, to Asics Corporation. Sport shoe. 266,881, 11-16-82, Cl. D2-309.000.
Ueno, Yoshio, to Asics Corporation. Sport shoe sole unit. 266,882, 11-16-82, Cl. D2-320.000.
Ungaro, Nicholas A., to Schweiger Industries, Inc. Table or similar article. 266,887, 11-16-82, Cl. D6-177.000.
Ungaro, Nicholas A., to Schweiger Industries, Inc. Table or similar article. 266,888, 11-16-82, Cl. D6-179.000.
Uniroyal, Inc.: *See*—
Candiliotis, Gerassimos C., 266,920, Cl. D12-147.000.
U.S. Philips Corporation: *See*—
Wassenaar, Jan, 266,928, Cl. D14-73.000.
View-Master International Group: *See*—
Miller, Paul D.; Penney, Richard; and Joffe, Richard M., 266,931, Cl. D16-12.000.
Wallis, Donald D. Gas pump handle holder and ice scraper. 266,905, 11-16-82, Cl. D8-349.000.
Wassenaar, Jan, to U.S. Philips Corporation. Clock radio receiver. 266,928, 11-16-82, Cl. D14-73.000.
Willows Reed Products Limited: *See*—
Reid, Robert G., 266,897, Cl. D7-147.000.
Wilson, Harry E.: *See*—
Moore, David; and Wilson, Harry E., 266,899, Cl. D8-10.000.
Young, William F. Ring. 266,911, 11-16-82, Cl. D11-30.000.
Youngman, Stan. Paper roll holder. 266,885, 11-16-82, Cl. D6-97.000.

LIST OF PLANT PATENTEES

Ecke, Paul, Jr., to Paul Ecke Ranch. Poinsettia named Pink Curly. 4,950, 11-16-82, Cl. 86.000.
Ecke, Paul, Jr., to Paul Ecke Ranch. Poinsettia named White Curly. 4,951, 11-16-82, Cl. 86.000.
Ecke, Paul, Jr., to Paul Ecke Ranch. Poinsettia named Red Curly. 4,952, 11-16-82. Cl. 86.000.
Fleischle, Gerhard, to Oglevee Associates, Inc. Variety of Streptocarpus named Dolly. 4,945, 11-16-82, Cl. 68.000.
Fleischle, Gerhard, to Oglevee Associates, Inc. Distinct variety of Streptocarpus named Lady. 4,946, 11-16-82, Cl. 68.000.
Fleischle, Gerhard, to Oglevee Associates, Inc. Distinct variety of Streptocarpus named Nicky. 4,947, 11-16-82, Cl. 68.000.
Fleischle, Gerhard, to Oglevee Associates, Inc. Distinct variety of Streptocarpus named Hera. 4,948, 11-16-82, Cl. 68.000.
Hartmann, Fred B. Chrysanthemum plant. 4,949, 11-16-82, Cl. 78.000.
John Holmlund Nursery Co.: *See*—
Mathies, John, 4,944, Cl. 51.000.
Mathies, John, to John Holmlund Nursery Co. Maple called Deborah. 4,944, 11-16-82, Cl. 51.000.
Oglevee Associates, Inc.: *See*—
Fleischle, Gerhard, 4,945, Cl. 68.000.
Fleischle, Gerhard, 4,946, Cl. 68.000.
Fleischle, Gerhard, 4,947, Cl. 68.000.
Fleischle, Gerhard, 4,948, Cl. 68.000.
Olesen, Mogens: *See*—
Olesen, Pernille; and Olesen, Mogens, 4,939, Cl. 9.000.
Olesen, Pernille; and Olesen, Mogens, 4,940, Cl. 11.000.
Olesen, Pernille; and Olesen, Mogens, 4,941, Cl. 12.000.
Olesen, Pernille; and Olesen, Mogens. Rose plant. 4,939, 11-16-82, Cl. 9.000.
Olesen, Pernille; and Olesen, Mogens. Rose plant. 4,940, 11-16-82, Cl. 11.000.
Olesen, Pernille; and Olesen, Mogens. Rose plant. 4,941, 11-16-82, Cl. 12.000.
Paul Ecke Ranch: *See*—
Ecke, Paul, Jr., 4,950, Cl. 86.000.
Ecke, Paul, Jr., 4,951, Cl. 86.000.
Ecke, Paul, Jr., 4,952, Cl. 86.000.
Superior Farming Company: *See*—
Weinberger, John H., 4,942, Cl. 41.000.
Swenson, Elmer. Grapevine. 4,943, 11-16-82, Cl. 47.000.
Weinberger, John H., to Superior Farming Company. Nectarine tree (87-101). 4,942, 11-16-82, Cl. 41.000.

CLASSIFICATION OF PATENTS

ISSUED NOVEMBER 16, 1982

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 3

1.911 4,358,859

CLASS 4

228 4,358,860
255 4,358,861
542 4,358,862
607 4,358,863
665 4,358,864

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CLASS 8

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532 4,359,322

CLASS 15

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49 R 4,358,868
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CLASS 16

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211 R 4,358,876
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849 4,358,962
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364 4,358,978
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CLASS 100

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98 R 4,358,995

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CLASS 106

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90.46 4,359,019
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185 BA 4,359,021
188 AA 4,359,022
195 C 4,359,023
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CLASS 132

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144 4,359,061

CLASS 133

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CLASS 134

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CLASS 137

269 4,359,064
413 4,359,065
614.06 4,359,066
636.4 4,359,067

CLASS 139

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94 4,359,074
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CLASS 156

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1 CN 4,359,603
1 D 4,359,601
1 GP 4,359,605
1 SC 4,359,604
1 VC 4,359,606
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415 4,359,400
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435 4,359,405
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463 4,359,410
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33 TP 4,359,747
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167 4,359,760

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